COMPUTER ORGANIZTION

2022 CSC 220

PROJECT

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Test cases:

• Arithmetic operations

	Inp	S2 S1 S0 O O		Operation	Int	out	Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
0	0	0	0	G=X+Y'	10001111	10000001	00001101	1	0	0	0	

	Inp	S2 S1 S0 S0 O D D D D D D D D D		Operation	Input		Expected output					
S3	S2				Х	Y	G	С	V	N	Z	
0	0	0	1	G=X-Y	10001111	10000001	00001110	1	0	0	0	

	Input 3 S2 S1 S0 0 0 1 0			Operation	Input		Expected output					
S3	S2	S1	S0		Х	Υ	G	С	V	N	Z	
0	0	1	0	G=X	10001111	Х	10001111	0	0	1	0	

	Inp	Input 52 S1 S0 0 1 1		Operation	Input		Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
0	0	1	1	G=X+1	10001111	Х	10010000	0	0	1	0	

	Inp	out		Operation	Inp	out	Expected output					
S3	S2	S1	S0		Х	Υ	G	С	V	N	Z	
0	1	0	0	G=X+2	10001111	X	10010001	0	0	1	0	

	Input 3			Operation	Int	out	Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
0	1	0	1	G=X+3	10001111	Х	10010010	0	0	1	0	

				Operation	Inj	out	Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
0	1	1	0	G=X*2	10001111	Х	00011110	1	1	0	0	

	Input 53 S2 S1 S0 0 1 1 1			Operation	Input		Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
0	1	1	1	G=X*2+1	10001111	Х	00011111	1	1	0	0	

• Logical Operations

	Inpu	ut		Operation	Input		Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
1	0	0	0	G=X XOR Y	10001111	10000001	00001110	X	X	X	0	

				Operation	Int	out	Expected output					
S3	S2				Х	Y	G	С	V	N	Z	
1	0	0	1	G=X OR Y'	10001111	10000001	11111111	Х	X	X	0	

	Inp	ut		Operation	Input		Expected output					
S3	S2	S1	S0		Х	Y	G	С	V	N	Z	
1	0	1	0	G=X NAND Y	10001111	10000001	01111110	X	X	X	0	

	Inp	out		Operation	Inp	out	Expected output					
S3	S2	S1	S0		Х	Υ	G	С	V	N	Z	
1	0	1	1	G=X'	10001111	Х	01110000	Х	X	X	0	

• Shifting Operations

Input				Operation	Inj	out	Expected output				
S3	S2	S1	S0		Х	Y	G	С	V	N	Z
1	1	0	0	G=Y	Х	10000001	10000001	X	X	X	X

	Inp	out		Operation	In	put	Expected output				
S3	S2	S1	S0		Х	Y	G	С	V	N	Z
1	1	0	1	G=Arithmetic Shift Right Y	Х	10000001	11000000	Х	X	X	Х

Input				Operation	Int	out	Expected output				
S3	S2	S1	S0		Х	Y	G	С	V	N	Z
1	1	1	0	G=Logical Shift Right Y	Х	10000001	01000000	X	X	X	X

Input				Operation	Input		Expected output				
S3	S2	S1	S0		Х	Υ	G	С	V	N	Z
1	1	1	1	G=Switch Tail Left Y	Х	10000001	0000010	Х	X	Х	Х

• The Circuit:

