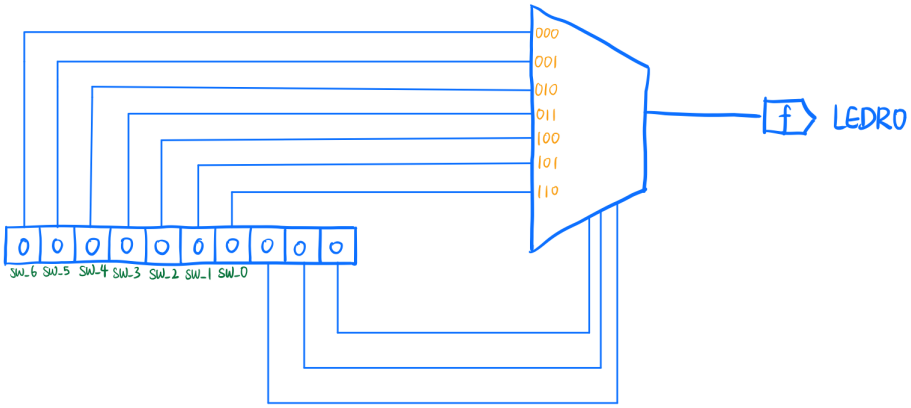
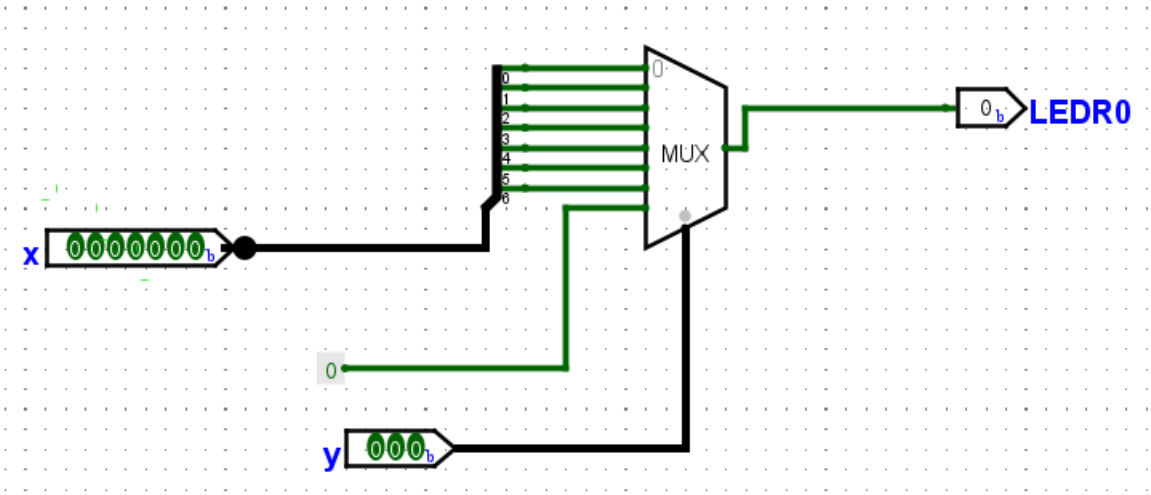
Part I

1.

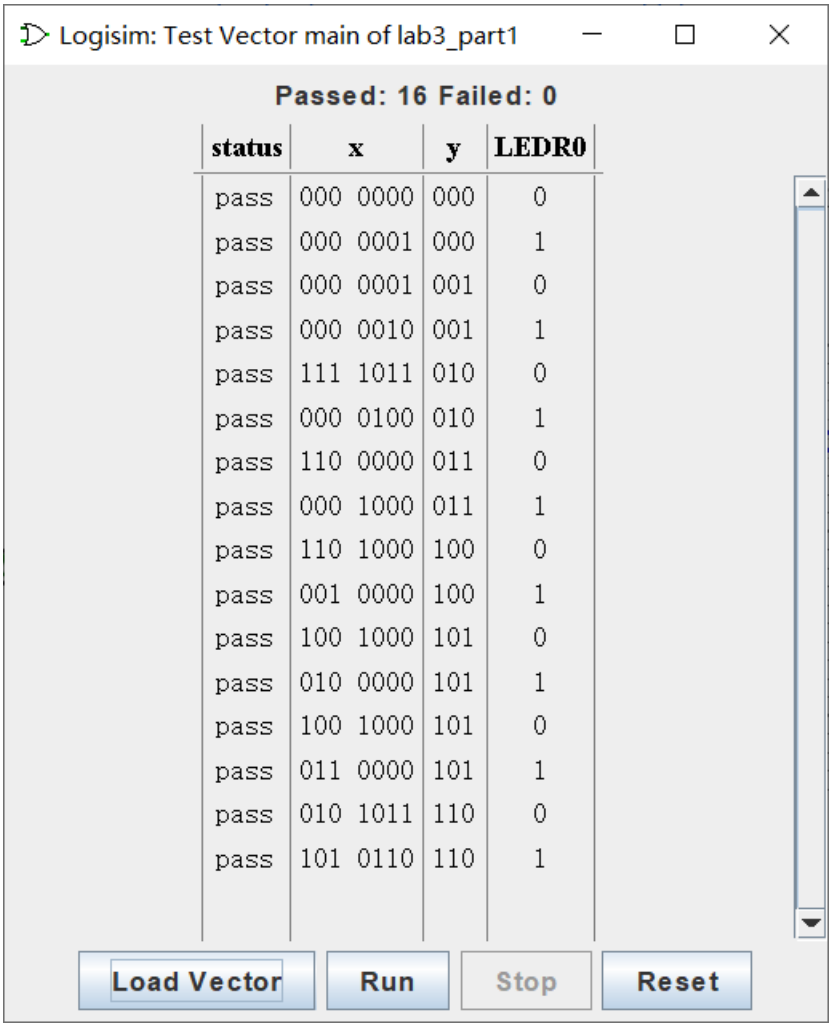


b) The input needs to be 10 bits large in order to provide all inputs for a 7to1 multiplexer.

2.



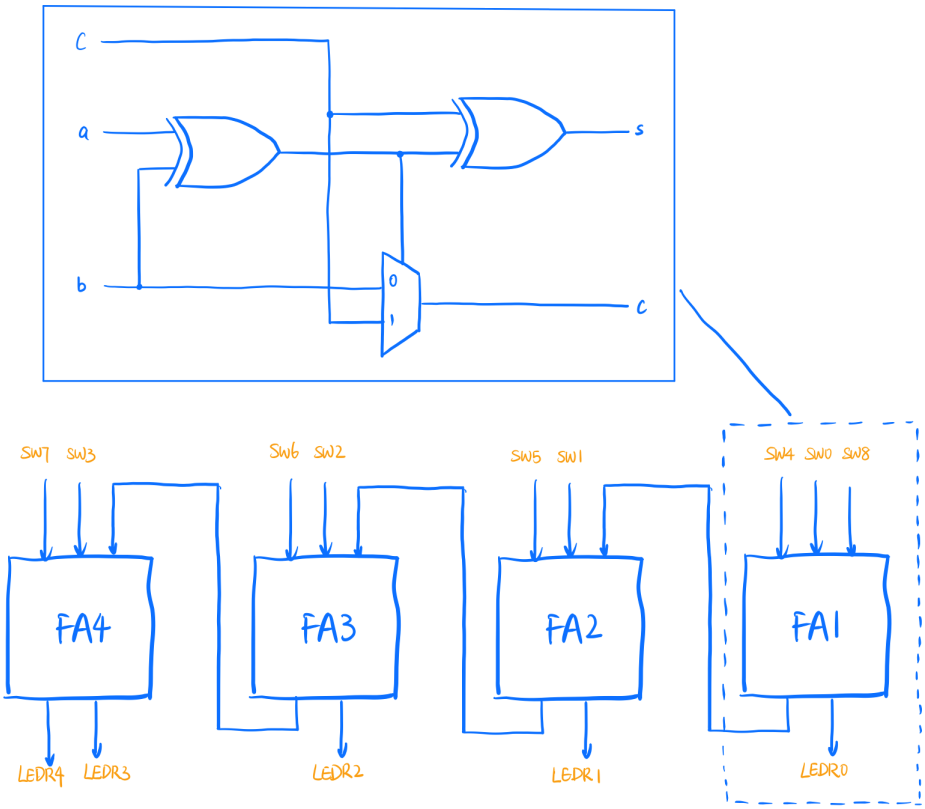
3.



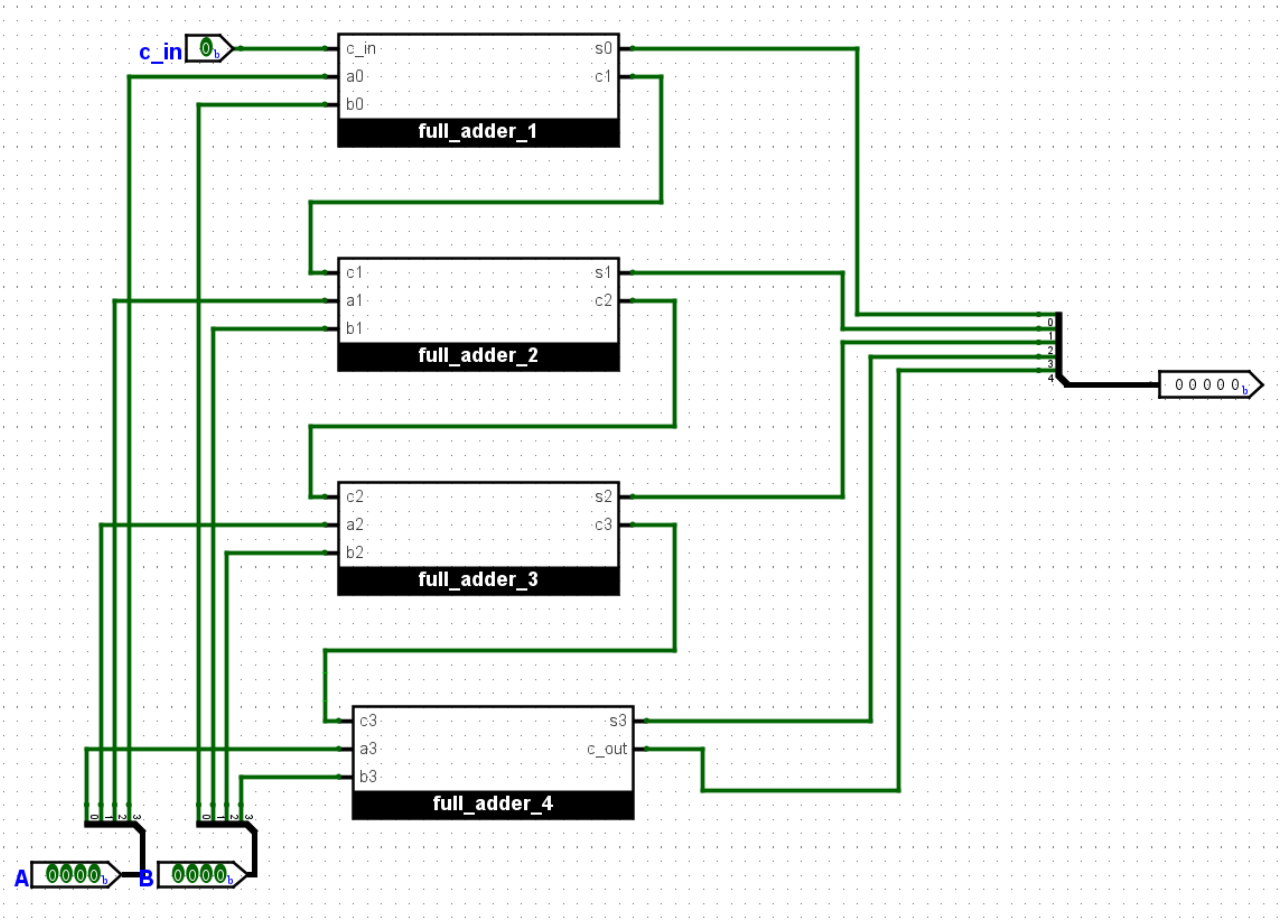
status	x	y	LEDR0
pass	000 0000	000	0
pass	000 0001	000	1
pass	000 0001	001	0
pass	000 0010	001	1
pass	111 1011	010	0
pass	000 0100	010	1
pass	110 0000	011	0
pass	000 1000	011	1
pass	110 1000	100	0
pass	001 0000	100	1
pass	100 1000	101	0
pass	010 0000	101	1
pass	100 1000	101	0
pass	011 0000	101	1
pass	010 1011	110	0
pass	101 0110	110	1

Part II

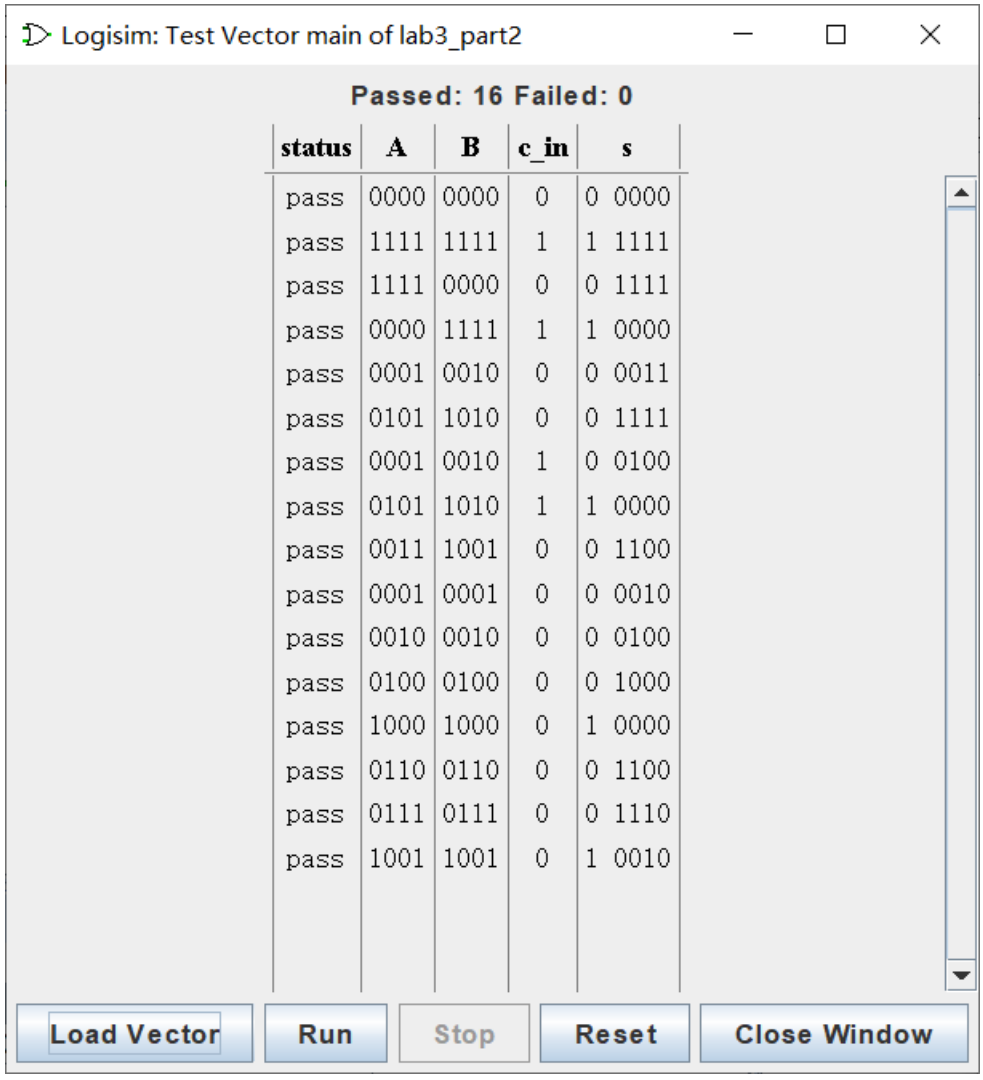
1.


C
a
b
s
c
0
1
SW7 SW3
SW6 SW2
SW5 SW1
SW4 SW0 SW8
FA4
FA3
FA2
FA1
LEDR4 LEDR3
LEDR2
LEDR1
LEDR0

2.

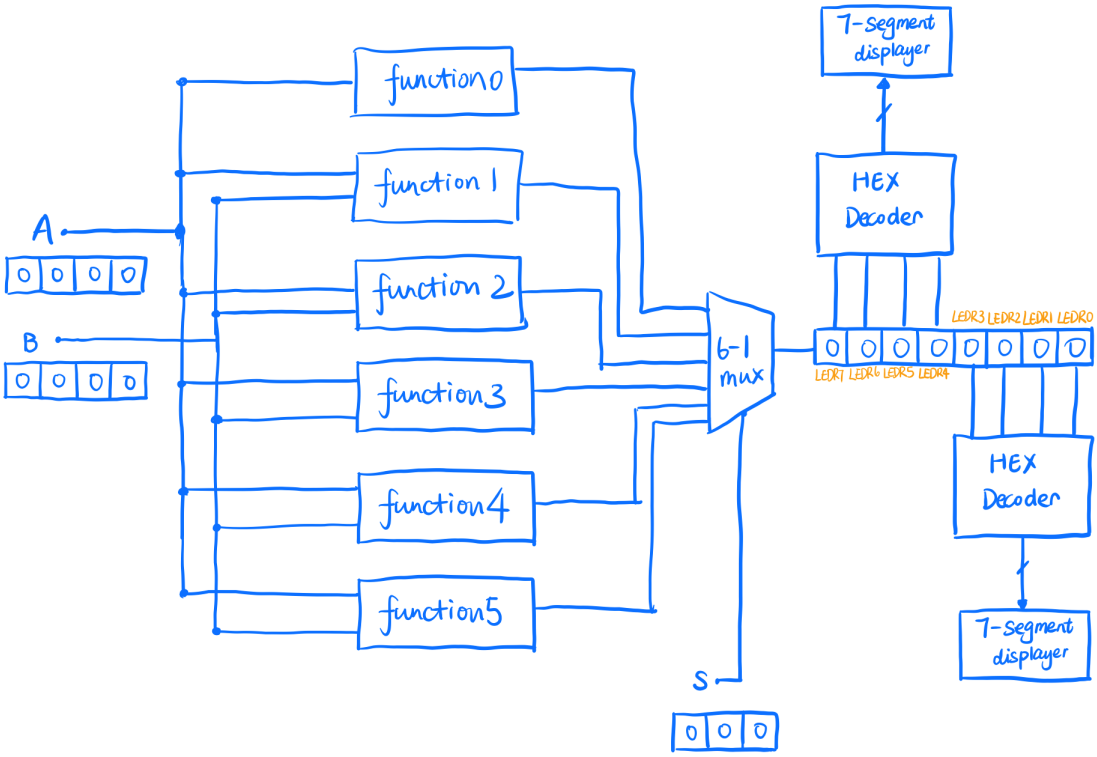

c_in
0b
c_in
a0
b0
s0
c1
full_adder_1
c1
a1
b1
s1
c2
full_adder_2
c2
a2
b2
s2
c3
full_adder_3
c3
a3
b3
s3
c_out
full_adder_4
0
1
2
3
4
0 0 0 0 0b
A
0000b
B
0000b

3.

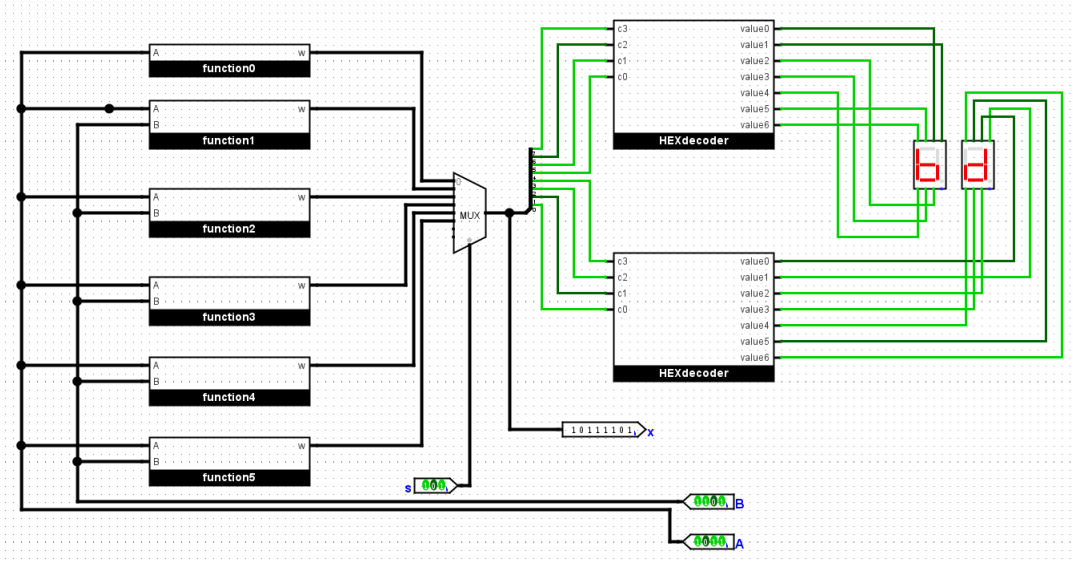

Logisim: Test Vector main of lab3_part2
Passed: 16 Failed: 0
status A B c_in s
pass 0000 0000 0 0 0000
pass 1111 1111 1 1 1111
pass 1111 0000 0 0 1111
pass 0000 1111 1 1 0000
pass 0001 0010 0 0 0011
pass 0101 1010 0 0 1111
pass 0001 0010 1 0 0100
pass 0101 1010 1 1 0000
pass 0011 1001 0 0 1100
pass 0001 0001 0 0 0010
pass 0010 0010 0 0 0100
pass 0100 0100 0 0 1000
pass 1000 1000 0 1 0000
pass 0110 0110 0 0 1100
pass 0111 0111 0 0 1110
pass 1001 1001 0 1 0010
Load Vector
Run
Stop
Reset
Close Window

Part III

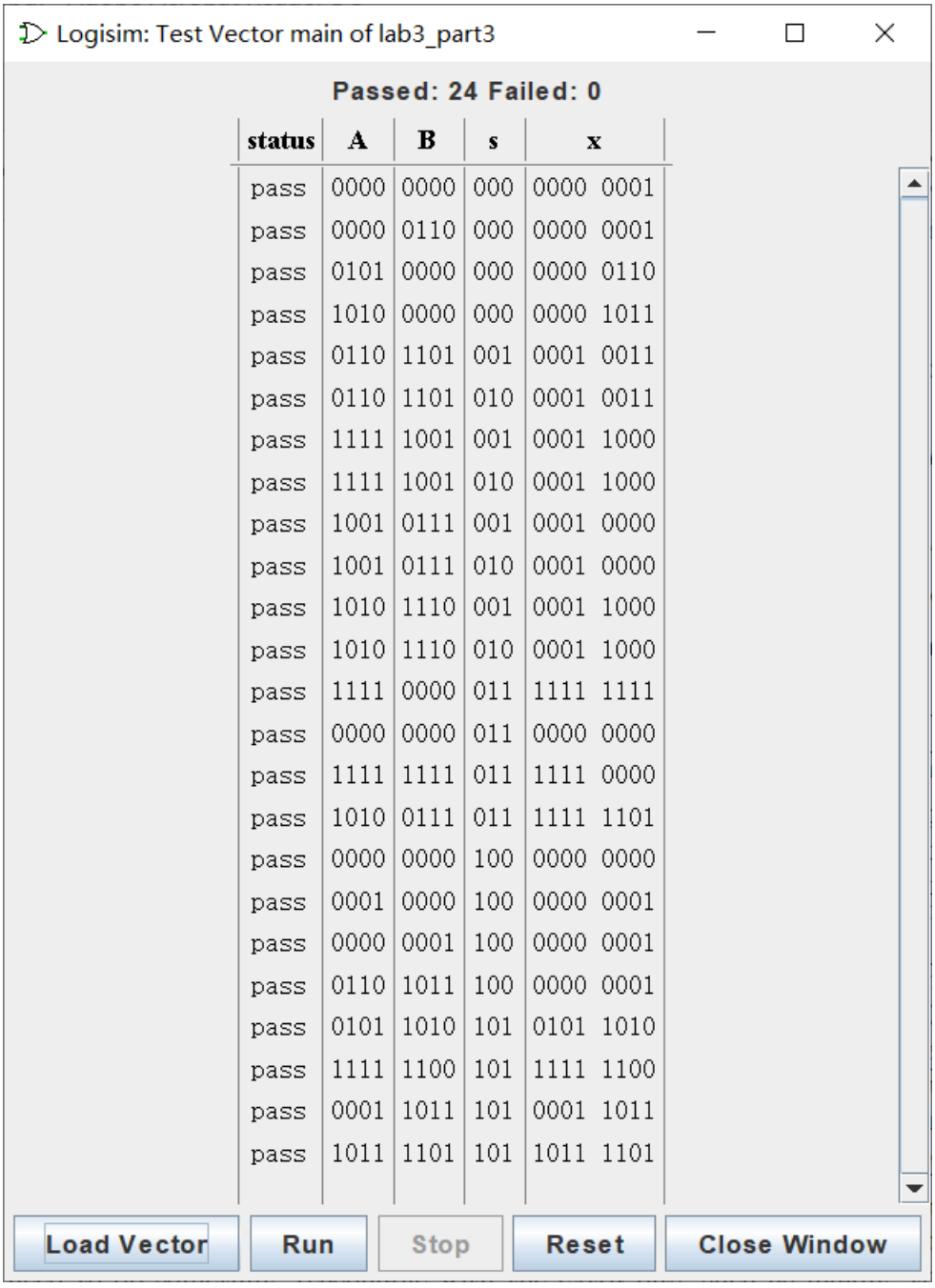
1.


function0
function 1
function 2
function3
function4
function5
A
B
S
6-1 mux
7-segment displayer
HEX Decoder
LEDR3 LEDR2 LEDR1 LEDR0
LEDR7 LEDR6 LEDR5 LEDR4
HEX Decoder
7-segment displayer

2.


function0
function1
function2
function3
function4
function5
MUX
HEXdecoder
HEXdecoder
value0
value1
value2
value3
value4
value5
value6
c3
c2
c1
c0
s
x
A
B

3.



status	A	B	s	x
pass	0000	0000	000	0000 0001
pass	0000	0110	000	0000 0001
pass	0101	0000	000	0000 0110
pass	1010	0000	000	0000 1011
pass	0110	1101	001	0001 0011
pass	0110	1101	010	0001 0011
pass	1111	1001	001	0001 1000
pass	1111	1001	010	0001 1000
pass	1001	0111	001	0001 0000
pass	1001	0111	010	0001 0000
pass	1010	1110	001	0001 1000
pass	1010	1110	010	0001 1000
pass	1111	0000	011	1111 1111
pass	0000	0000	011	0000 0000
pass	1111	1111	011	1111 0000
pass	1010	0111	011	1111 1101
pass	0000	0000	100	0000 0000
pass	0001	0000	100	0000 0001
pass	0000	0001	100	0000 0001
pass	0110	1011	100	0000 0001
pass	0101	1010	101	0101 1010
pass	1111	1100	101	1111 1100
pass	0001	1011	101	0001 1011
pass	1011	1101	101	1011 1101