Al Alamein International University
Faculty of Computer Science and Engineering

Midterm Project

Alamein Bank System

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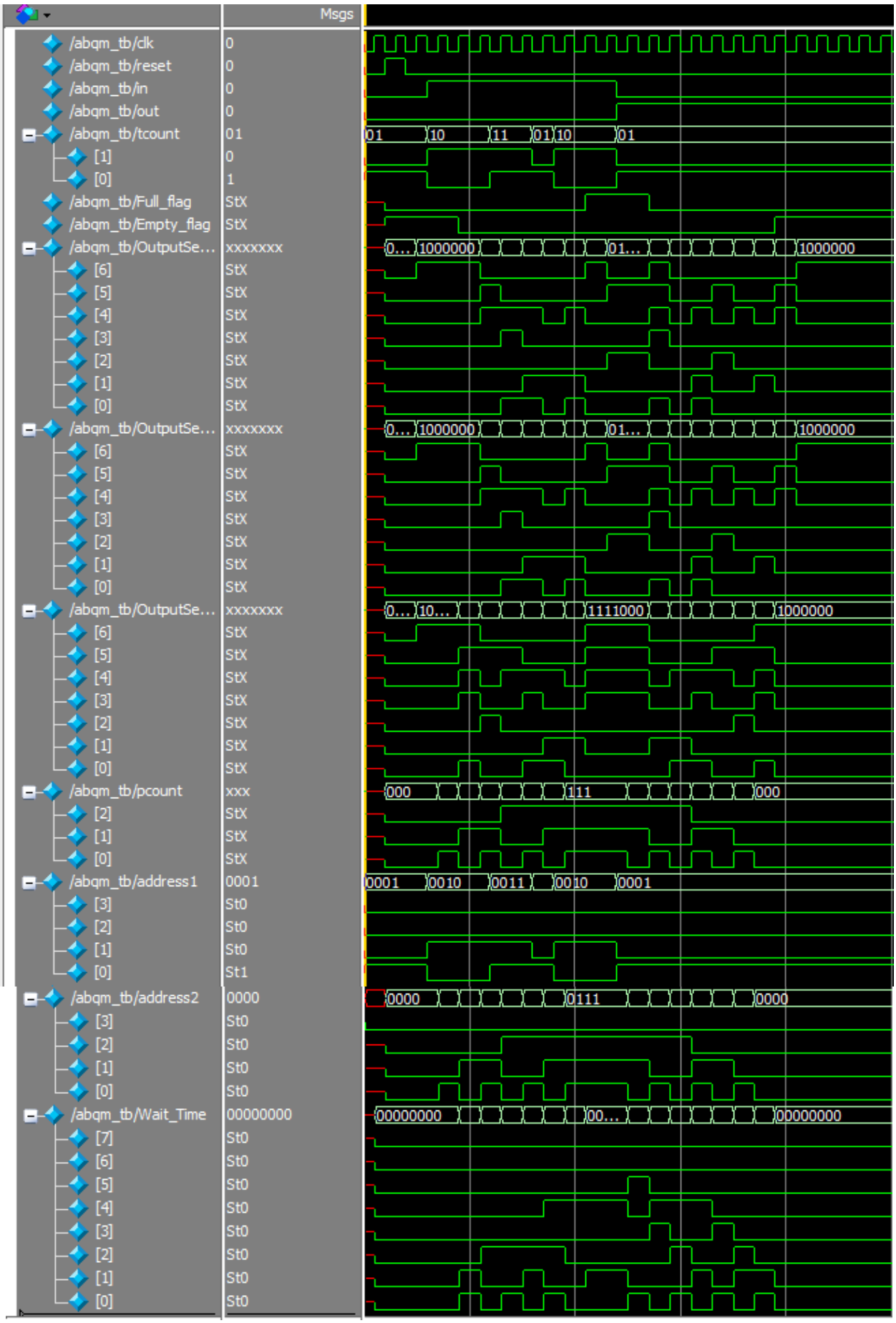
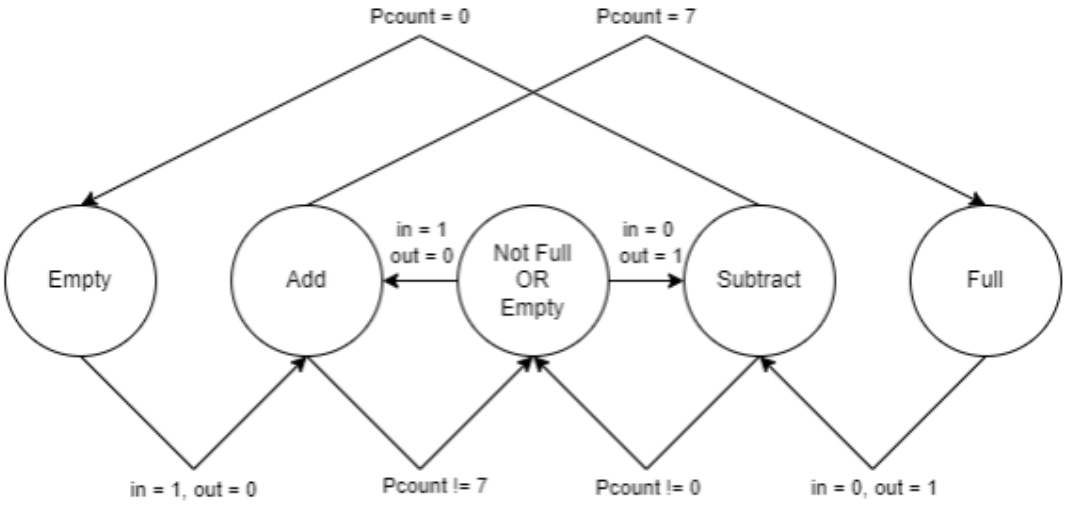
Pin's Names	Type	Description
clk	Input	ClK is used to synchronize all the components
reset	Input	Reset the system
in	Input	Represents the button at the start of the queue
out	Input	Represents the button at the end of the queue
tcount	Input	Represents the number of tellers
Full flag	output	A led that lights up when the queue is full (pcount = 7)
Empty flag	output	A led that lights up when the queue is empty (pcount = 0)
Output Segment Right	output	The wait time could be two digits, in which case they would need to be divided into two seven-segment groups. The seven-segment display on the right (representing the units) is called Output Segment Right.
Output Segment Left	output	The wait time could be two digits, in which case they would need to be divided into two seven-segment groups. The seven-segment display on the left (representing the tenth) is called Output Segment Left.
Output Segment pcount	output	Displays the pcount (0 - 7) on a 7-segment display

Tcount	Pcount	Wtime	BCD
1	0	0	00000000
1	1	3	00000011
1	2	6	00000110
1	3	9	00001001
1	4	12	00010010
1	5	15	00010101
1	6	18	00011000
1	7	21	00100001
2	0	0	00000000
2	1	3	00000011
2	2	4	00000100
2	3	6	00000110
2	4	7	00000111
2	5	9	00001001
2	6	10	00010000
2	7	12	00010010
3	0	0	00000000
3	1	3	00000011
3	2	4	00000100
3	3	5	00000101
3	4	6	00000110
3	5	7	00000111
3	6	8	00001000
3	7	9	00001001

This is a Table representing all the possible Pcount – Tcount Combinations and the outputted Wait Time in both Decimal and BCD


Msgs
/abqm_tb/clk
/abqm_tb/reset
/abqm_tb/in
/abqm_tb/out
/abqm_tb/tcount
[1]
[0]
/abqm_tb/Full_flag
/abqm_tb/Empty_flag
/abqm_tb/OutputSe...
[6]
[5]
[4]
[3]
[2]
[1]
[0]
/abqm_tb/OutputSe...
[6]
[5]
[4]
[3]
[2]
[1]
[0]
/abqm_tb/OutputSe...
[6]
[5]
[4]
[3]
[2]
[1]
[0]
/abqm_tb/pcount
[2]
[1]
[0]
/abqm_tb/address1
[3]
[2]
[1]
[0]
/abqm_tb/address2
[3]
[2]
[1]
[0]
/abqm_tb/Wait_Time
[7]
[6]
[5]
[4]
[3]
[2]
[1]
[0]
0
0
0
0
01
0
1
StX
StX
xxxxxxx
StX
StX
StX
StX
StX
StX
StX
xxxxxxx
StX
StX
StX
StX
StX
StX
StX
xxxxxxx
StX
StX
StX
StX
StX
StX
StX
xxx
StX
StX
StX
0001
St0
St0
St0
St1
0000
St0
St0
St0
St0
00000000
St0
St0
St0
St0
St0
St0
St0
St0
01
10
11
01
10
01
0...
1000000
01...
1000000
0...
1000000
01...
1000000
0...
10...
1111000
1000000
000
111
000
0001
0010
0011
0010
0001
0000
0111
0000
00000000
00...
00000000

FSM:


Pcount = 0
Pcount = 7
Empty
Add
in = 1
out = 0
Not Full
OR
Empty
in = 0
out = 1
Subtract
Full
in = 1, out = 0
Pcount != 7
Pcount != 0
in = 0, out = 1