BLG 322E HW4

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a) Active -> 0, Deactive -> 1 (This table constructed in logisim. Output logical expression -> Table)

BG'	BR1'	BR2'	BR3'	BR'	BG1'	BG2'	BG3'
0	0	0	0	0	0	1	1
0	0	0	1	0	0	1	1
0	0	1	0	0	0	1	1
0	0	1	1	0	0	1	1
0	1	0	0	0	1	0	1
0	1	0	1	0	1	0	1
0	1	1	0	0	1	1	0
0	1	1	1	1	1	1	1
1	0	0	0	0	1	1	1
1	0	0	1	0	1	1	1
1	0	1	0	0	1	1	1
1	0	1	1	0	1	1	1
1	1	0	0	0	1	1	1
1	1	0	1	0	1	1	1
1	1	1	0	0	1	1	1
1	1	1	1	1	1	1	1

b) Outputs:

BR' = BR1'||BR2'||BR3'
BG1' = BR1' && BG'
BG2' = BR2' && BG' && BR1
BG3' = BR3' && BG' && BR1 && BR2

c)Signals:

CPU (Fetch), AS = 1	
BR1 = 0, BR2 = 0	Both send request to the Bus arbiter
BR = 0	Bus arbiter sends request to the CPU
BG = 0	CPU accepts request and return BG signal
BG1 = 0	Bus arbiter accepts bus grant signal and active the DMAC1's BG1 sig.
AS = 0	When CPU stop using bus it actives the AS signal
BGACK = 0 (DMAC1)	When DMAC sees the AS is active it activates the BGACK signal
BR1 = 1	While DMAC1 using the bus it deactivates BR1 signal for other BRs
DMAC1 Opetations	DMAC uses the bus
BGACK = 1, AS = 1	When it finished its job, it deactivates the BGACK and AS signals
CPU(Bus Master)	If CPU needs the bus, it uses the bus
BR2 = 0	DMAC2 sends request
BR = 0	Bus arbiter sends request to the CPU
BG = 0	CPU accepts request and return BG signal
BG2 = 0	Bus arbiter accepts bus grant signal and active the DMAC2's BG2 sig.
AS = 0	When CPU stop using bus it actives the AS signal
BGACK = 0 (DMAC2)	When DMAC sees the AS is active it activates the BGACK signal
BR2 = 1	While DMAC2 using the bus it deactivates BR2 signal for other BRs
DMAC2 Operations	DMAC uses the bus
BGACK = 1, AS = 1	When it finished its job, it deactivates the BGACK and AS signals
CPU(Bus Master)	If CPU needs the bus, it uses the bus