HOMEWORK 2 GROUP 3

Activation Conditions:

1. Low Beam conditions:

1.1 Ignition switch must be already ON, then the Low Beam switch turned ON,

1.2 Low Beam switch already ON, then the Ignition Switch turned ON

1.3 Low Beam must be ON within max 500ms of meeting all conditions and sending the requests

2. Position Lights conditions:

2.1 Low beam switch or position light switch is ON

2.2 Outputs must be ON in max. 500ms since the requests are sent and all conditions are met

3. Turn Flasher conditions:

3.1.1 Left flasher output ON if: Ignition is ON and left flasher switch ON

3.1.2 Right flasher output ON if: Ignition is ON and right flasher switch ON

3.2 If the input is active for more than 3 flashing cycles, the flasher is ON as long as the input is active(with an 800ms period, which has a dark phase of 400 ms)

3.3 If the input is active for less than 3 flashing cycles, the output flashes 3 times only(with an 800ms period, which has a dark phase of 400 ms)

3.4.1 If the left flasher is active and the flasher switch is turned to the right, the left flashing cycles are terminated and the right flasher output is activated

3.4.2 If the right flasher is active and the flasher switch is turned to the left, the right flashing cycles are terminated and the left flasher output is activated

3.5 If the ignition is turned OFF, the flashing cycles are terminated

3.6 Flashers turn on within 100ms

Default Values:

- Low Beam default value: LOW_BEAM = OFF
- Position Lights default value: POS_LIGHTS = OFF
- Left Flashing default value: Left_Turn = OFF
- Right Flashing default value: Right_Turn = OFF

Nr	Object Text	Test_Preconditions	Test_Procedure	Expected Results	Test_Postconditions	Testing Technique	Requirements
1	**Low Beam Behavior** Ignition switch is ON and Low Beam switch is turned ON from OFF	IGNITION = ON LOW_BEAM = OFF	Turn on low beams We check their status after 500ms LOW_BEAM = ON	Low Beam is ON within 500ms	LOW_BEAM = OFF IGNITION = OFF	Systematic Testing	1.1 1.3
2	**Low Beam Behavior** Ignition switch is OFF and Low Beam switch is OFF	IGNITION = OFF LOW_BEAM = OFF	Turn on low beams LOW_BEAM = ON	Low Beams stay OFF	LOW_BEAM = OFF IGNITION = OFF	Systematic Testing	1.2
3	**Low Beam Behavior** Ignition switch is ON and Low Beam	IGNITION = ON LOW_BEAM = ON	Turn off low beams LOW_BEAM = OFF	Low Beams turn OFF	LOW_BEAM = OFF IGNITION = OFF	Systematic Testing	1.2

	switch is turned OFF from ON						
4	**Low Beam Behavior** Low Beam switched 10000 times between ON and OFF within 1ms	IGNITION = ON LOW_BEAM = OFF	Turn on and off low beams 10000 times LOW_BEAM = ON LOW_BEAM = OFF	Low Beams stay OFF	LOW_BEAM = OFF IGNITION = OFF	Support Testing (Stress test) Boundary value test	1.1 1.3
5	**Low Beam Behavior** Low Beam switched 10000 times between ON and OFF within 500ms	IGNITION = ON LOW_BEAM = OFF	Turn on and off low beams LOW_BEAM = ON LOW_BEAM = OFF	Low Beams will turn ON and OFF	LOW_BEAM = OFF IGNITION = OFF	Support Testing (Stress test) Boundary value test	1.1 1.3
6	**Low Beam Behavior** We turn low beams on and then turn them off after 1ms	IGNITION = ON LOW_BEAM = OFF	Turn on and off low beams LOW_BEAM = ON LOW_BEAM = OFF	Low beams stay off	LOW_BEAM = OFF IGNITION = OFF	Systematic Testing	1.1 1.3
7	**Position Lights Behavior** Low beams are turned ON	POS_LIGHTS= OFF IGNITION = OFF	Turn on low beams LOW_BEAM = ON	Pos Lights are ON within 500ms	POS_LIGHTS = OFF IGNITION = OFF	Systematic Testing	2.1 2.2
8	**Position Lights Behavior** Low beams are turned ON	POS_LIGHTS= OFF IGNITION = ON	Turn on low beams LOW_BEAM = ON	Pos Lights are ON within 500ms	POS_LIGHTS = OFF IGNITION = OFF	Systematic Testing	2.1 2.2

9	**Position Lights Behavior** P_Lights are turned ON	POS_LIGHTS= OFF	Turn on pos lights POS_LIGHTS = ON	Pos Lights are ON within 500ms	POS_LIGHTS = OFF	Systematic Testing	2.1 2.2
10	**Position Lights Behavior** The switch is turned from Low Beams ON to P_Lights ON	LOW_BEAM= ON POS_LIGHTS= OFF	POS_LIGHTS = ON LOW_BEAM = OFF	Pos Lights stay ON	POS_LIGHTS = OFF LOW_BEAM = OFF	Systematic Testing	2.1
11	**Position Lights Behavior** The switch is turned from P_Lights ON to Low Beams ON	POS_LIGHTS = ON LOW_BEAM = OFF	We turn off pos lights and turn on low beams POS_LIGHTS = OFF LOW_BEAM = ON	Pos Lights stay ON	POS_LIGHTS = OFF LOW_BEAM = ON	Systematic Testing	2.1
12	**Position Lights Behavior** The switch is turned from P_Lights ON to Low Beams ON 10000 times	POS_LIGHTS = OFF LOW_BEAM = OFF	We switch between position lights and low beam 10000 times POS_LIGHTS = OFF LOW_BEAM = ON	Pos Lights stay ON	POS_LIGHTS = OFF	Support Testing (Stress test)	2.1
13	**Position Lights Behavior** We turn the switch on OFF position	POS_LIGHTS = ON	Turn off pos lights POS_LIGHTS = OFF	Pos Lights turn OFF	POS_LIGHTS = OFF LOW_BEAM = OFF	Systematic Testing	2.1

14	**Turn Flasher Behavior** We turn the left flashing ON for 3 cycles	Left_Turn = OFF IGNITION = ON	Keep Left_Turn_ON on 1 for 3 cycles Left_Turn = ON	Left side flashes for 3 cycles then it turns off (dark phase of 400ms and light phase of 400ms)	Left_Turn = OFF IGNITION = OFF	Systematic Testing	3.1.1
15	**Turn Flasher Behavior** We turn the left flashing ON for continuous flashing	Left_Turn = OFF IGNITION = ON	Keep Left_Turn_ON on 1 for more than 3 cycles Left_Turn = ON	Left side flashes untill turning off	Left_Turn = OFF IGNITION = OFF	Systematic Testing	3.2
16	**Turn Flasher Behavior** We turn the right flashing ON for 3 cycles	Right_Turn = OFF IGNITION = ON	Keep Right_Turn_ON on 1 for 3 cycles Right_Turn = ON	Right side flashes for 3 cycles then it turns off	Right_Turn = OFF IGNITION = OFF	Systematic Testing	3.1.2
17	**Turn Flasher Behavior** We turn the right flashing ON for continuous flashing	Right_Turn = OFF IGNITION = ON	Keep Right_Turn_ON on 1 for more than 3 cycles Right_Turn = ON	Right side flashes until turning off	Right_Turn = OFF IGNITION = OFF	Systematic Testing	3.2

18	**Turn Flasher Behavior** We switch from left side to right side flashing	Left_Turn = OFF Right_Turn = OFF IGNITION = ON	Turn off left side flasher and turn on right side flasher Left_Turn = OFF Right_Turn = ON	Left side stops flashing and right one starts on the selected position	Left_Turn = OFF Right_Turn = OFF IGNITION = OFF	Systematic Testing	3.4.1
19	**Turn Flasher Behavior** We switch from right side to left side flashing	Left_Turn = OFF Right_Turn = ON IGNITION = ON	Turn off right side flasher and turn on left side flasher Left_Turn = ON Right_Turn = OFF	Right side stops flashing and left one starts on the selected position	Left_Turn = OFF Right_Turn =OFF IGNITION = OFF	Systematic Testing	3.4.2
20	**Turn Flasher Behavior** We switch back and forth between left and right side flashing 10.000 times in the first cycle	Left_Turn = OFF Right_Turn = OFF IGNITION = ON	Switch between them multiple times: Left_Turn = ON Right_Turn = OFF And: Left_Turn = OFF Right_Turn = ON	The flasher works accordingly: begins the flashing sequence and ends it when switched between positions	Left_Turn =OFF Right_Turn = OFF IGNITION = OFF	Support Testing (Stress test)	3.4.1 3.4.2
21	**Turn Flasher Behavior** We switch left flashing OFF after we held it ON for less than 2.4s	Left_Turn = OFF IGNITION = ON	Turn off the left side flasher Left_Turn = OFF	The flasher does the 3 cycles then it stops	Left_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.3

22	**Turn Flasher Behavior** We switch left flashing OFF after we held it ON for more than 2.4s	Left_Turn = ON IGNITION = ON	Turn off the left side flasher Left_Turn = OFF	The flasher finishes the last cycle then stops	Left_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.2
23	**Turn Flasher Behavior** We switch right flashing OFF after we held it ON for less than 2.4s	Right_Turn = ON IGNITION = ON	Turn off the right side flasher Right_Turn = OFF	The flasher does the 3 cycles then it stops	Right_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.3
24	**Turn Flasher Behavior** We switch right flashing OFF after we held it ON for more than 2.4s	Right_Turn = ON IGNITION = ON	Turn off the right side flasher Right_Turn = OFF	The flasher finishes the last cycle then stops	Right_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.2
25	**IGNITION TEST** We turn off ignition	IGNITION = ON RIGHT_TURN = ON LOW_BEAMS = ON	Turn off ignition IGNITION = OFF	Flashers and low beams turn off RIGHT_TURN = OFF LOW_BEAMS = OFF	IGNITION = ON RIGHT_TURN = OFF LOW_BEAMS = OFF	Systematic Testing	3.1.2 && 1.1

Nr	Test	Test Preconditions	Test Procedure	Expected Results	Test Postconditions	Testing Technique	Requirements
1	**Position Lights Behavior** Position Lights are turned ON	POS_LIGHTS = OFF LOW_BEAMS = OFF	Turn ON pos lights We check their status after 500ms POS_LIGHTS = ON	Pos Lights are ON within 500ms	POS_LIGHTS = OFF	Systematic Testing Boundary Value	2.1 2.2
2	**Left Turn Flasher Behavior** We switch left flashing OFF after we held it ON for one cycle	Left_Turn = OFF Right_Turn = OFF IGNITION = ON	Left_Turn = ON, hold for one cycle, then Left_Turn = OFF	The flasher does the 3 cycles then it stops	Left_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.3
3	**Low Beam Behavior** Low Beam switch is ON and Ignition is turned ON from OFF	IGNITION = OFF LOW_BEAM = ON	Turn on low beams We check their status after 500ms IGNITION = ON	Low Beam is ON within 500ms	LOW_BEAM = OFF IGNITION = OFF	Systematic Testing Boundary Value	1.1 1.3
4	**Turn Flasher Behavior** We switch back and forth between left and right side flashing 10 times in the first cycle	Left_Turn = OFF Right_Turn = OFF IGNITION = ON	Switch between them 10 times: Left_Turn = ON Right_Turn = OFF And: Left_Turn = OFF Right_Turn = ON	The flasher works accordingly: begins the flashing sequence and ends it when switching between positions	Left_Turn =OFF Right_Turn = OFF IGNITION = OFF	Support Testing (Stress test)	3.4.1 3.4.2
5	**Left Turn Flasher Activation Time** We switch left flashing ON and turn it OFF after 1 second	Left_Turn = OFF Right_Turn = OFF IGNITION = ON	Left_Turn = ON Then, after 1000 ms: Left_Turn = OFF	The left turn flasher is on within 100 ms	Left_Turn = OFF IGNITION = OFF	Systematic Testing Boundary Value	3.6