Software Requirements Specifications

**(SRS)**

LED String Animation

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# Revision History Table:

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| Version | Author | Date | Status |
| 1.0 | Hesham – Mahmoud Gamal - Mark | 06/02/2020 | Initial Creation |

# Current Document State:

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| **Date** | **Version** | **Document Status** | **Author** |
| 06/02/2020 | 1.0 | Proposed | Hesham – Mahmoud Gamal - Mark |

# Project Description

The project is composed of 3 sets of LED Strings Simulating the animation of LEDs in a Car.

One set is named “Tail” and it simulates the animation of car’s back LEDs while the other 2 sets are named “Left TI” and “Right TI” is simulating the animation of left and right turn indicator in a car.

Each one of the 3 functions operates based on input signals coming from 3 switches named “Tail Switch”, “Left TI” and “Right TI” respectively in addition to “Welcome Mode” which shall operates one of 2 different modes based on the status of the mode switch. System layout is as shown in **Figure 1** below.



Figure 1: layout of the system

# Block Diagram

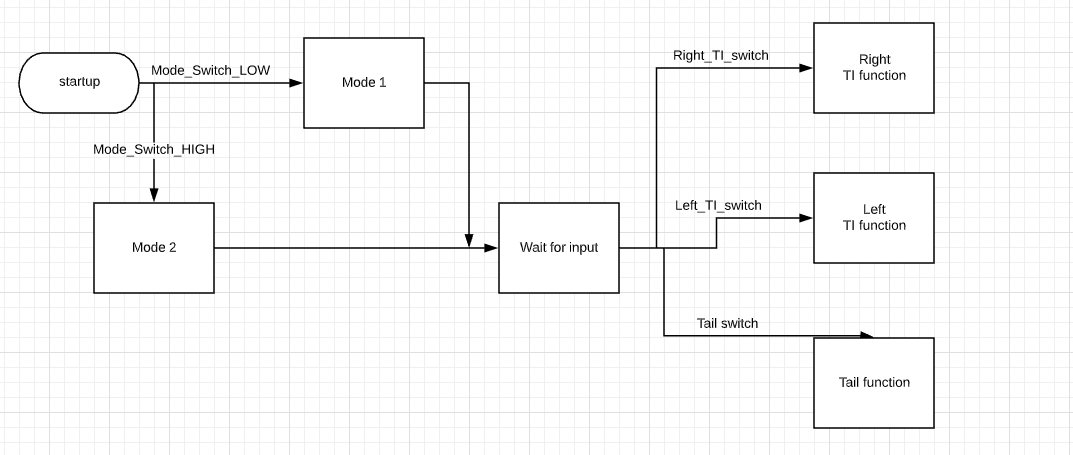


Fig. 2

# Feature Description

Start Up Requirements: -

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_01\_V01
  + Req\_ PO5\_LSAN\_ SRS\_Start animation mode 1\_01-V01

SW shall read the pin switch status.

* + Req\_ PO5\_LSAN\_ SRS\_ Start animation mode 1\_02-V01

SW shall set flag so as to start the MODE 1 function if the switch is pressed.

* + Req\_ PO5\_LSAN\_ SRS\_ Start animation mode 1\_03-V01

SW shall start MODE 1 which is to switch on the 12 pins one by one from L6 to L1, then from R1 to R6 and vise versa. Then they all should switch on and off. A small delay, e.g. 100ms, shall be inserted between each change to be noticeable and smooth.

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_02\_V01
  + Req\_ PO5\_LSAN\_ SRS\_Start animation mode 2\_01-V01

SW shall read the pin switch status.

* + Req\_ PO5\_LSAN\_ SRS\_ Start animation mode 2\_02-V01

SW shall reset flag so as to start the MODE 2 function if the switch is released.

* + Req\_ PO5\_LSAN\_ SRS\_ Start animation mode 2\_03-V01

SW shall start MODE 1 which is to switch on the 12 pins one by one from L1 to L6, simultaneously with R1 to R6 . Then repeat this scenario again. A small delay, e.g. 100ms, shall be inserted between each change to be noticeable and smooth.

Tail Function Description: -

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_03\_V01
  + Req\_ PO5\_LSAN\_ SRS\_Tail Function High\_01-V01

SW shall read tail switch.

* + Req\_ PO5\_LSAN\_ SRS\_Tail Function High \_02-V01

If the signal is HIGH, then Tail Pins shall be activated.

* + Req\_ PO5\_LSAN\_ SRS\_Tail Function High \_03-V01

Wait until the signal is changed.

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_04\_V01
  + Req\_ PO5\_LSAN\_ SRS\_Tail Function Low\_01-V01

SW shall read tail switch.

* + Req\_ PO5\_LSAN\_ SRS\_Tail Function Low \_02-V01

If the signal is LOW, then Tail Pins shall be deactivated.

* + Req\_ PO5\_LSAN\_ SRS\_Tail Function Low \_03-V01

Wait until the signal is changed.

Turn Indicator (TI) Function Description

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_05\_V01
  + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator On\_01-V01

SW shall read the right TI switch pin status.

* + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator On\_02-V01

If the signal is HIGH, then right pins TI animation shall be activated.

-R1 (100 ms) > R1+R2(100 ms) > R1+R2+R3(100 ms) > …,etc.

-Turn off Leds

-Repeat.

* + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator On\_03-V01

Wait until the signal is changed.

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_05\_V02
  + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator Off\_01-V01

SW shall read the right TI switch pin status.

* + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator On\_02-V01

If the signal is LOW, then right pins TI animation shall be deactivated.

* + Req\_ PO5\_LSAN\_ SRS\_Right Turn Indicator Off\_03-V01

Wait until the signal is changed.

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_05\_V03
  + Req\_ PO5\_LSAN\_ SRS\_Left Turn Indicator On\_01-V01

SW shall read the left TI switch pin status.

* + Req\_ PO5\_LSAN\_ SRS\_ Left Turn Indicator On\_02-V01

If the signal is HIGH, then left pins TI animation shall be activated.

-L1 (100 ms) > L1+L2(100 ms) > L1+L2+L3(100 ms) > …,etc.

-Turn off Leds

-Repeat.

* + Req\_ PO5\_LSAN\_ SRS\_ Left Turn Indicator On\_03-V01

Wait until the signal is changed.

* Req\_ PO5\_LSAN\_ LED STRING ANIMATION\_05\_V04
  + Req\_ PO5\_LSAN\_ SRS\_ Left Turn Indicator Off\_01-V01

SW shall read the Left TI switch pin status.

* + Req\_ PO5\_LSAN\_ SRS\_ Left Turn Indicator On\_02-V01

If the signal is LOW, then Left pins TI animation shall be deactivated.

* + Req\_ PO5\_LSAN\_ SRS\_ Left Turn Indicator Off\_03-V01

Wait until the signal is changed.

# Reference Documents Table: -

|  |  |  |  |
| --- | --- | --- | --- |
| Ref. number | Doc. Name | Version | Status |
| 1 | LED\_STRING\_ANIMATION\_CYRS | 1.2 | Proposed |