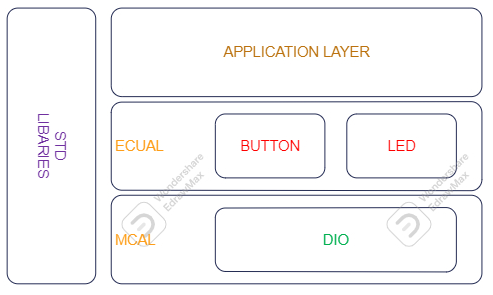
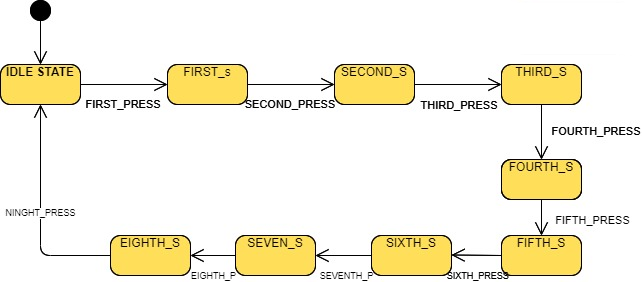
TASK: LED SEQUENCE V1.0

AUTHOR: MOHAMMED ABDEL-WAHAB

**Layered Architecture:**



**State machine diagram for the main flow of the Application:**



* IDLE STATE: ALL LEDS ARE OFF
* FIRST STATE: LED 0 IS ONLY ON
* SECOND STATE: LED 0 & LED 1 ARE ON
* THIRD STATE : LED 0 & LED 1 & LED 2 ARE ON
* FOURTH STATE: ALL LEDS ARE ON
* FIFTH STATE: LED 0 IS ONLY OFF
* SIXTH STATE: LED 0 & LED 1 ARE OFF
* SEVENTH STATE: LED 0 & LED 1 & LED 2 ARE OFF
* EIGHTH STATE: ALL LEDS ARE OFF

**A project APIs:**

DIO DRIVER:

/\*\*

\* @brief Initialize the direction of specific pin @ref direction\_t

\* @param \_pin\_config A Reference of the pin configuration @pin\_config\_t

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_pin\_direction\_intialize(const pin\_config\_t \*pin\_config\_ptr,direction\_t a\_direction);

/\*\*

\* @brief Write the logic of specific pin @ref logic\_t

\* @param \_pin\_config A Reference of the pin configuration @pin\_config\_t

\* @param logic

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_pin\_write\_logic(const pin\_config\_t \*pin\_config\_ptr,const logic\_t a\_logic);

/\*\*

\* @brief Read the logic of specific pin @ref logic\_t

\* @param \_pin\_config A Reference of the pin configuration @pin\_config\_t

\* @param logic

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_pin\_read\_logic(const pin\_config\_t \*pin\_config\_ptr, logic\_t \*logic\_ptr);

/\*\*

\* @brief Toggle the logic of specific pin @ref logic\_t

\* @param \_pin\_config A Reference of the pin configuration @pin\_config\_t

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_pin\_toggle\_logic(const pin\_config\_t \*pin\_config\_ptr);

/\*\*

\* @brief Initialize the direction of specific pin and Initialize its logic

\* @param \_pin\_config A Reference of the pin configuration @pin\_config\_t

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

/\*

Std\_ReturnType DIO\_pin\_intialize(const pin\_config\_t \*pin\_config\_ptr);

\*/

/\*\*

\*

\* @param port\_index

\* @param direction

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_port\_direction\_intialize(const port\_index\_t a\_port\_index, uint8\_t a\_direction);

/\*\*

\* @param port\_index

\* @param logic

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_port\_write\_logic(const port\_index\_t a\_port\_index , uint8\_t a\_logic);

/\*\*

\* @param port\_index

\* @param logic

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_port\_read\_logic(const port\_index\_t a\_port\_index , uint8\_t \*const a\_logic\_ptr);

/\*\*

\* @param port\_index

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType DIO\_port\_toggle\_logic(const port\_index\_t a\_port\_index);

LED DRIVER:

/\*\*

\* @breif Initialize The led by configuring the pin as output and write low

\* @param Led The reference of the led module configuration

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType LED\_initialize(const led\_t \*led\_ptr);

/\*\*

\* @breif Turn the led on

\* @param led The reference of the led module configuration

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType LED\_turn\_on(const led\_t \*led\_ptr);

/\*\*

\* @breif Turn the led off

\* @param led The reference of the led module configuration

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType LED\_turn\_off (const led\_t \*led\_ptr);

/\*\*

\* @breif Toggle the led

\* @param led The reference of the led module configuration

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType LED\_turn\_toggle (const led\_t \*led\_ptr);

BUTTON DRIVER:

/\*\*

\* @breif Initialize The assigned pin to be input

\* @param btn he reference of the button module configuration

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType BTN\_init(const button\_t \*btn\_ptr);

/\*\*

\* @breif Read the push button if is it pressed or released

\* @param btn The reference of the button module configuration

\* @param btn\_state The reference of the variable that store the button status @ref button\_status\_t

\* @return status of the function

\* E\_OK :the function done successfully

\* E\_NOT\_OK :the function has issues performing the function

\*/

Std\_ReturnType BTN\_read\_state(const button\_t \*btn\_ptr, button\_status\_t \*btn\_states\_ptr);