Layered architecture

Application
ECUAL
MCAL
Microcontroller

ECUAL (Electronic unit application layer) for electronic components

MCAL (microcontroller application layer) for microcontroller

System modules

Motor →ECUAL

Button→ECUAL

Led→ ECUAL

DIO →MCAL

Timer →MCAL

Application
Button – led – motor
DIO -- timer
microcontroller

APIs

Motor APIs

;void ADC_Init(void)

Uint16t ADC_Read(void)

Button APIs

;void BTN0_Init(void)

;Uint8t BTN0_GetValue(void)

LED APIs

;void LED_vInit(unsigned char portname,unsigned char pinnumber)

;void LED_vTurnOn(unsigned char portname,unsigned char pinnumber)

;void LED_vTurnOff(unsigned char portname,unsigned char pinnumber)

;void LED_vToggle(unsigned char portname,unsigned char pinnumber)

;unsigned char LED_u8ReadStatus(unsigned char portname,unsigned char pinnumber)

DIO APIs

void DIO_vsetPINDir(unsigned char portname,unsigned char pinnumber,unsigned char ;direction)

void DIO_write(unsigned char portname,unsigned char pinnumber,unsigned char ;outputvalue)

;unsigned char DIO_u8read(unsigned char portname,unsigned char pinnumber)

;void DIO_toggle(unsigned char portname,unsigned char pinnumber)

;void DIO_set_port_direction(unsigned char portname,unsigned char direction)

;void DIO_write_port(unsigned char portname,unsigned char portvalue)

;unsigned char DIO_read_port(unsigned char portname)

;void DIO_vconnectpullup(char portname ,char pinnumber, char connect_pullup)

;void write_low_nibble(unsigned char portname,unsigned char value)

void write_high_nibble(unsigned char portname,unsigned char value);

Timer APIs

;void timer_CTC_init_interrupt(void)

;void timer_wave_nonPWM(void)

;void timer_wave_fastPWM(void)

;void timer_wave_phasecorrectPWM(void)