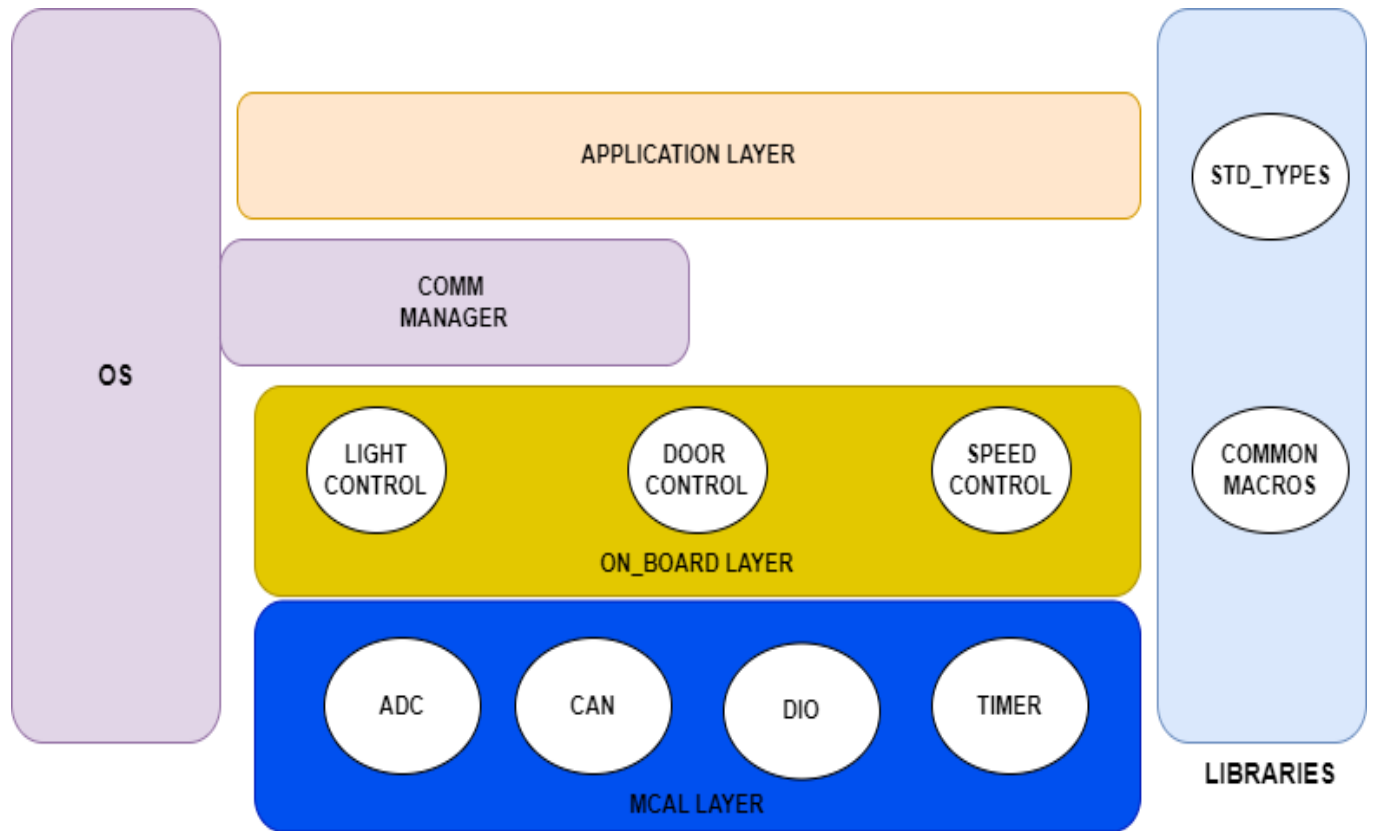# ECU1 Static Design

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➢ ECU1 LAYERED ARCHITECTURE

➢ ECU1 Consists Of 7 Modules:

- DIO
- CAN
- TIMER
- ADC
- LIGHT CONTROL
- DOOR CONTROL
- SPEED CONTROL

➢ ECU1 DETAILS APIS&TYPES:

- ### DIO
  - #### TYPES

NAME	pinConfg	
TYPE	STRUCTURE	
RANGE	portNo	Port which pin belongs to
	pinNo	Number of the pin in the port
	pinDr	The direction of the pin
	inRes	The internal resistor
DESCRIPTION	Structure to configure each individual pin	

Name	PinDir	
TYPE	ENUM	
RANGE	INDIR	0
	OURDIE	1
DESCRIPTION	Enum to hold pin direction	

NAME	inResType	
TYPE	ENUM	
RANGE	PULLUP	0
	PULLDOWN	1
	NOA	2
DESCRIPTION	Enum to hold pin resistor	

NAME	pinStatus	
TYPE	ENUM	
RANGE	LOW	0
	HIGH	1
DESCRIPTION	Enum to hold the status of the pin	

NAME	portID	
TYPE	ENUM	
RANGE	PORTA	0
	PORTB	1
	PORTC	2
	PORTD	3
	PORTE	4
	PORTF	5
DESCRIPTION	**Enum to hold port id**	

NAME	pinID	
TYPE	ENUM	
RANGE	PIN0	0
	PIN1	1
	PIN2	2
	PIIN3	3
	PIN4	4
	PIN5	5
	PIN6	6
	PIN7	7
DESCRIPTION	**Enum to hold pin id**	

- **APIS**

Function Name	Dio_Init		
Parameters	Input		Output
	configPtr	Pointer to pin configuration data	None
Return	none		
Description	Function to initialize the DIO module		

Function Name	DIO_PIN_write	
Parameters	Input	
	pinID	Indicates the index of the pin
	pinStatus	Indicates the status of the pin
Return	none	
Description	Function to set the level of a pin	

Function Name	DIO_PIN_read	
Parameters	Input	
	pinID	Indicates the index of the pin
Return	pinStatus	Indicates the state of the pin
Description	Function to read a level of a pin	

- **TIMER**
    - **TYPES**

NAME	timerConfig
TYPE	STRUCTURE
RANGE	
DESCRIPTION	**Sturcture holds the timer call back function**

- **APIS**

Function Name	timer_init	
Parameters	**input**	
	TimerConfig	**Pointer to timer configuration data**
Return	**None**	
Description	**Function to initialize the timer module**	

Function Name	timer_start	
Paramteters	**Input**	
	time	**Unit32 time in seconds**
Return	**None**	
Description	**Function to start the timer module**	

Function Name	timer_stop
Parameters	**None**
Return	**None**
Description	**Function to stop the timer module**

- ADC
  - TYPES

NAME	ChannelID	
TYPE	Enum	
RANGE	CH0	0
	CH1	1
	CH2	2
	CH3	3
	CH4	4
	CH5	5
	CH6	6
	CH7	7
DESCRIPTION	Enum holds ADC channels	

  - APIS

Function Name	ADC_init	
Parameters	None	
Return	None	
Description	Function to initialize the ADC module	

Function Name	ADC_Read_CHannel	
Parameters	Input	
	CH_NO	Indicates channel id
Return	CH_value	The value in the ADC register
Description	Function to read the value of the ADC	

- **CAN**
  - **APIS**

Function Name	CAN_init
Parameters	None
Return	None
Description	Function to initialize CAN module

Function Name	CAN_send_data	
Parameters	Input	
	Unit32 data	Data that will be sent through CAN
Return	None	
Description	Function to send data through can module	

Function Name	CAN_recieve_data	
Parameters	output	
	Unint32*data	Data that will be received through CAN
Return	None	
Description	Function to receive data through CAN module	

- **Light control module**
  - **APIS**

Function Name	Light_control_init
Parameters	None
Return	None
Description	Function to initialize the light sensor

Function Name	Light_status	
Parameters	None	
Return	Unit8 state	State of light
Description	Function to return the status of the light sensor	

- **Door control module**
  - **APIS**

Function Name	Door_init
Parameters	None
Return	None
Description	Function to initialize the door sensor

Function Name	Door_status	
Parameters	None	
Return	Unit8 state	State of door
Description	Function to return the state of the door sensor	

- **Speed control module**
  - **APIS**

Function Name	Speed_init	
Parameters	None	
Return	None	
Description	Function to initialize the speed sensor	

Function Name	Speed_value	
Parameters	None	
Return	Unit8 value	Value of the speed sensor
Description	Function to get the value of the speed sensor	