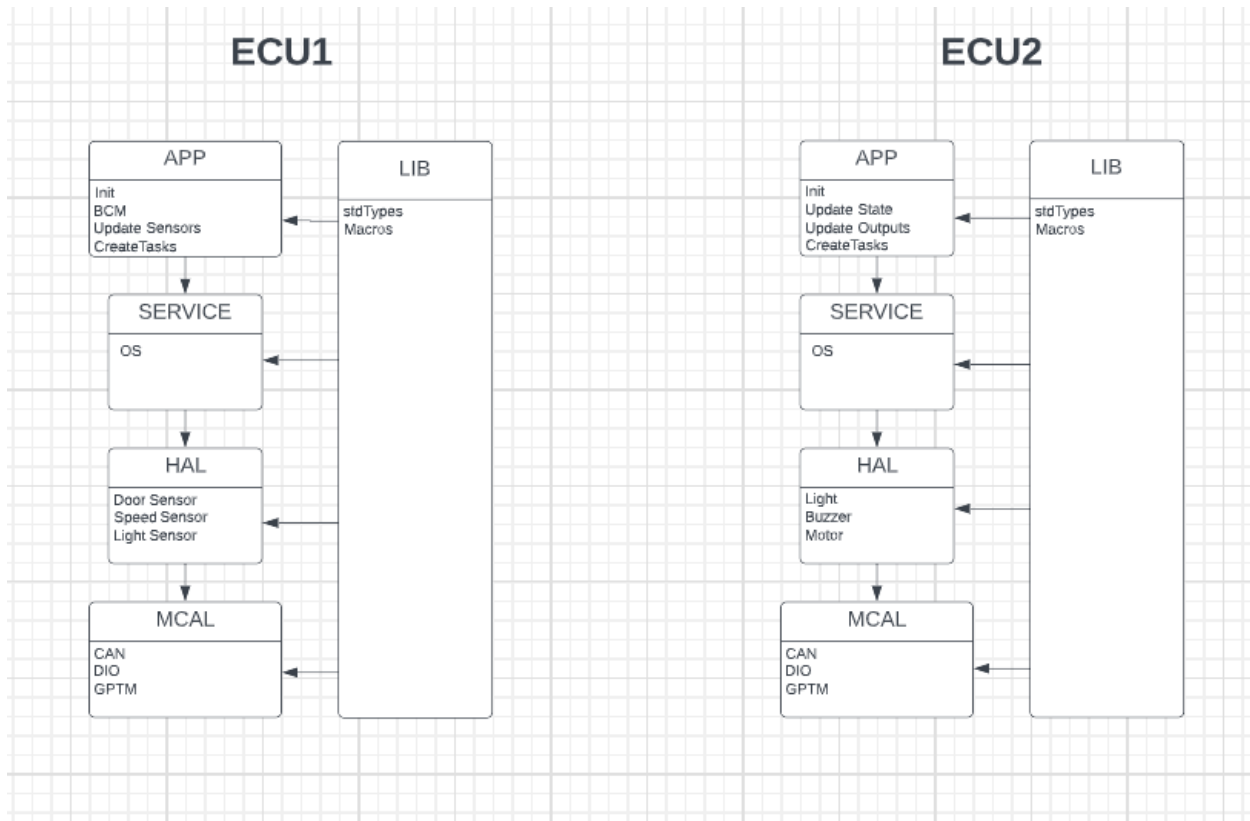
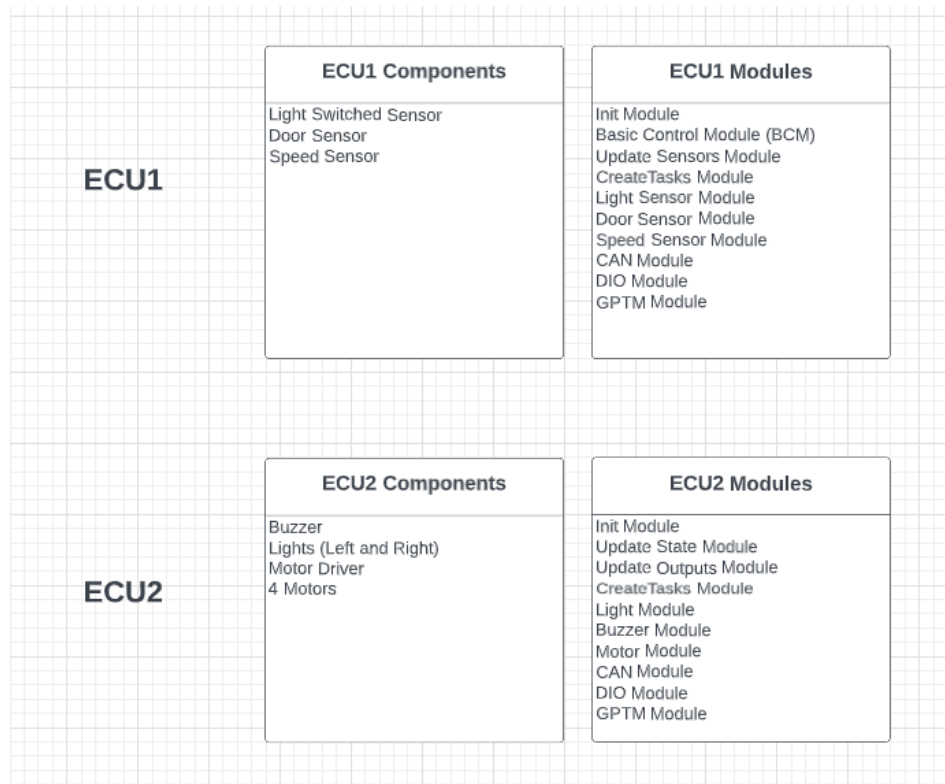


1- Layered Architecture



2- Components and Modules



3.1- ECU1 APIs

Function Name	Module	Args	Return	Description
can_init()	CAN	void	void	Initialize CAN Module
can_deinit()	CAN	Void	Void	De-initialize CAN Module
can_send()	CAN	enum Sensor: 0 → 2 enum State: 0 → 1	void	Send status message to BCM using two variables: enum sensor: SPEED → 0, LIGHT → 1, DOOR → 2 enum state: HIGH → 1, LOW → 0.
can_checkError()	CAN	void	Bool Error: 0 → 1	Check if the status message sent successfully or not, if sent → 0, if not → 1
dio_init()	DIO	void	void	Initialize DIO Module
dio_deinit()	DIO	Void	void	De-initialize DIO Module
dio_read()	DIO	enum Port: 0 → 1 enum Pin: 0 → 15	enum State: 0 → 1	Read from sensors: enum port: SPEED:moving→HIGH, stopped→LOW DOOR: closed → HIGH, opened→ LOW LIGHT: ON →HIGH, OFF →LOW enum pin: PIN0→0, PIN1→1..PIN15→15 enum state: LOW→0, HIGH→1
dio_write()	DIO	enum Port: 0→1 enum Pin: 0→15 enum State: 0→1	void	Set or Reset a certain pin. enum port: SPEED:moving→HIGH, stopped→LOW DOOR: closed → HIGH, opened→ LOW LIGHT: ON →HIGH, OFF →LOW enum pin: PIN0→0, PIN1→1..PIN15→15 enum state: LOW→0, HIGH→1
gptm_init()	GPTM	void	void	Initialize and configure the timer which timer to use, timer mode, ...
gptm_deinit()	GPTM	void	void	De-initialize the timer
gptm_startCount()	GPTM	Uin8_t Time: 0→255 enum unit: 0→2	void	Set a value and a unit enum unit: SECOND → 0, MILLI_SECOND→1
light_sensor_init()	Light_Sensor	Void	Void	Initialize the light Sensor configurations
light_sensor_deinit()	Light_Sensor	Void	Void	De-initialize the light Sensor
light_sensor_read()	Light_Sensor	void	enum State 0→1	Read the state of the light enum state: LOW→0, HIGH→1
door_sensor_init()	Door_Sensor	Void	Void	Initialize door sensor
door_sensor_deinit()	Door_Sensor	void	Void	De-initialize door sensor
door_sensor_read()	Door_Sensor	void	state	Read the state of the enum state: LOW→0, HIGH→1
speed_sensor_init()	Speed_Sensor	Void	Void	Initialize speed sensor
speed_sensor_deinit()	Speed_Sensor	void	Void	De-initialize speed sensor

3.2- ECU2 APIs

Function Name	Module	Args	Return	Description
can_init()	CAN	void	void	Initialize CAN Module
can_deinit()	CAN	Void	Void	De-initialize CAN Module
can_receive()	CAN	enum Sensor: 0 → 2 enum State: 0 → 1	void	Receive status message that has two variables to know which sensor (door/light/speed), and whether is it ON or OFF. enum sensor: SPEED → 0, LIGHT → 1, DOOR → 2 enum state: HIGH → 1, LOW → 0.
dio_init()	DIO	void	void	Initialize DIO Module
dio_deinit()	DIO	Void	void	De-initialize DIO Module
dio_read()	DIO	enum Port: 0 → 1 enum Pin: 0 → 15	enum State: 0 → 1	enum port: SPEED:moving→HIGH, stopped→LOW DOOR: closed → HIGH, opened→ LOW LIGHT: ON →HIGH, OFF →LOW enum pin: PIN0→0, PIN1→1..PIN15→15 enum state: LOW→0, HIGH→1
dio_write()	DIO	enum Port: 0 → 1 enum Pin: 0 → 15 enum state: 0 → 1	void	Set or Reset a certain pin: enum port: SPEED:moving→HIGH, stopped→LOW DOOR: closed → HIGH, opened→ LOW LIGHT: ON →HIGH, OFF →LOW enum pin: PIN0→0, PIN1→1..PIN15→15 enum state: LOW→0, HIGH→1
gptm_init()	GPTM	void	void	Initialize and configure the timer which timer to use, timer mode, ...
gptm_deinit()	GPTM	void	void	De-initialize the timer
gptm_startCount()	GPTM	Uint8_t Time: 0→255 enum unit: 0→2	void	Set a value and a unit enum unit: SECOND → 0, MILLI_SECOND→1
light_init()	Light	Void	Void	Initialize the left and right lights
light_deinit()	Light	Void	Void	De-initialize the lights
light_setState()	Light	void	enum state: 0 → 1	Write the state of the lights whether ON or OFF. enum state: LOW→0, HIGH→1
motor_init()	Motor	Void	void	Initialize the Motors
motor_deinit()	Motor	Void	Void	De-initialize the Motors
motor_control()	Motor	enum Direction: 0→3	Void	Set the direction
motor_enable()	Motor	enum state: 0 → 1	Void	Enable or Disable the motors. enum state: LOW→0, HIGH→1
buzzer_init()	Buzzer	void	void	Initialize the buzzer
buzzer_deinit()	Buzzer	Void	void	De-initialize the buzzer
buzzer_enable()	Buzzer	enum state:0→1	void	Enable or Disable the buzzer enum state: LOW→0, HIGH→1

