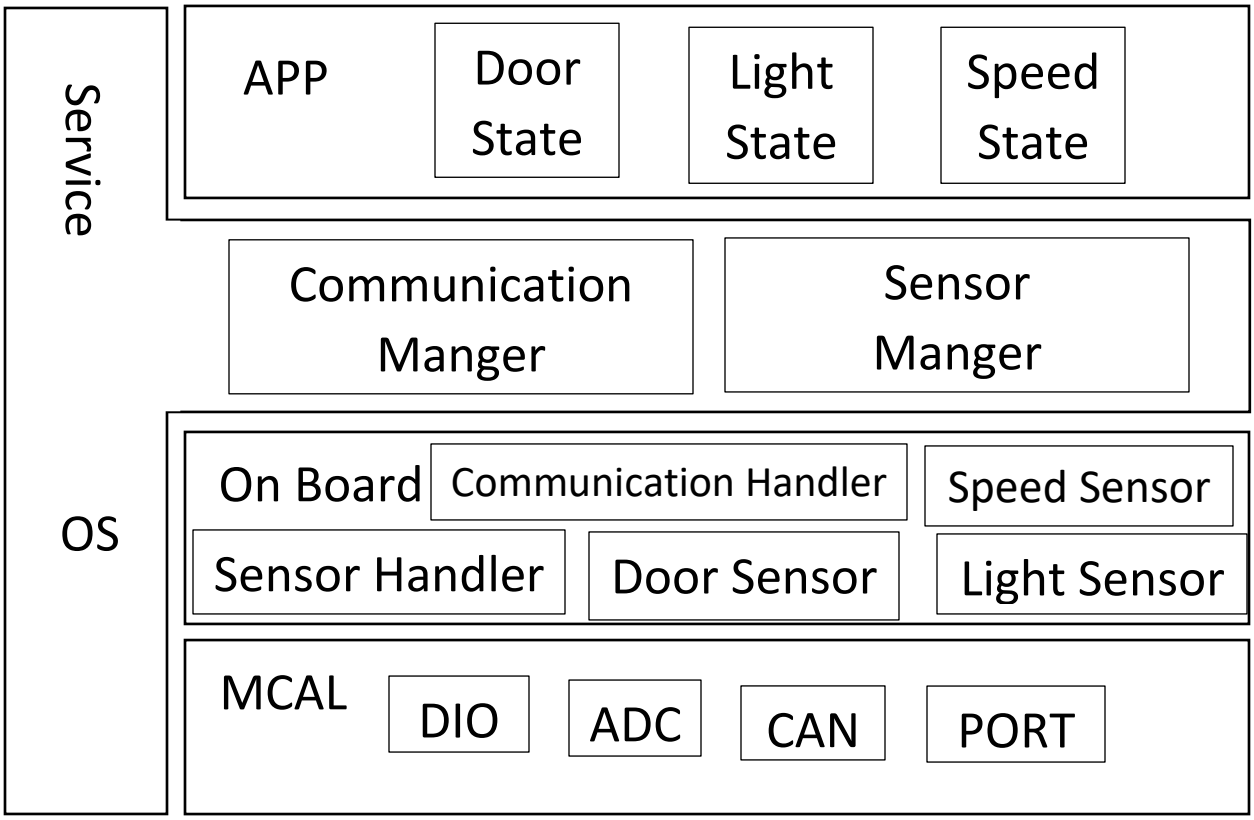
Static Design

ECU 1

1. Layered Architecture



2. full detailed APIs:

2.1. PORT

Name	**Port Init**
Syntax	void Port_Init(PortConfig_t* PortConfig)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	PortConfig
Parameters (out)	Non
Return Value	void
Description	Initialize Port Module

Name	**PortConfig_t**
Type	Struct
Description	A struct holds Port Initializations

2.2. CAN

Name	**CAN Init**
Syntax	void CAN_Init(CANConfig_t* CANConfig)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	CAnConfig
Parameters (out)	Non
Return Value	void
Description	Initialize CAN Module

Name	**CAN Send Data**
Syntax	void CAN_SendData(Char Data)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	Data
Parameters (out)	Non
Return Value	void
Description	Send Data Across CAN Module

Name	**CANConfig_t**
Type	Struct
Description	A struct holds CAN Initializations

2.3. ADC

Name	**ADC Init**
Syntax	void ADC_Init(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Void
Description	Initialize ADC Module

Name	**ADC Start Conversion**
Syntax	uint32 ADC_StartConversion(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	uint32
Description	Read The Data of Sensors

2.4. DIO

Name	**DIO Read Pin**
Syntax	uint8 DIO_ReadData(DIOPort_t Port, DIOPin_t Pin)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Port, Pin
Parameters (out)	Non
Return Value	uint8
Description	Read Pin Status

Name	**DIOPort_t / DIOPin_t**
Type	enum
Description	enum holds the Port / Pin Number

2.5. Light Sensor

Name	**LS Read Pin**
Syntax	Uint32 LS_GetData(void)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Uint32
Description	Get the Reading of The Sensor

2.6. Door Sensor

Name	**DS Read Pin**
Syntax	Uint32 DS_GetData(void)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Uint32
Description	Get the Reading of The Sensor

2.7. Speed Sensor

Name	**SS Read Pin**
Syntax	Uint32 SS_GetData(void)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Uint32
Description	Get the Reading of The Sensor

2.8. Sensor Handler

Name	**SH_Select**
Syntax	void SH_Select (uint 8 Ch_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Ch_Id
Parameters (out)	Non
Return Value	Void
Description	Select the Sensor to Get the Reading

2.9. Communication Handler

Name	**CH_Send**
Syntax	void CH_SendData(uint8 Msg , uint8 CH_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Msg, CH_Id
Parameters (out)	Non
Return Value	Void
Description	Choose The Bus and Give the Data To it

2.10. Communication Manger

Name	**CM_Send**
Syntax	void CM_SendData(uint8 Msg , uint8 CH_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Msg, CH_Id
Parameters (out)	Non
Return Value	Void
Description	Choose The Bus and Give the Data To it

2.11. Sensor Manger

Name	**SM_Select**
Syntax	void SM_Select (uint 8 Ch_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Ch_Id
Parameters (out)	Non
Return Value	Void
Description	Select the Sensor to Get the Reading

2.12. Speed State

Name	**CarSpeed_Read**
Syntax	void CarSpeed_Read(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Void
Description	Get the Speed of the car

2.13. Light State

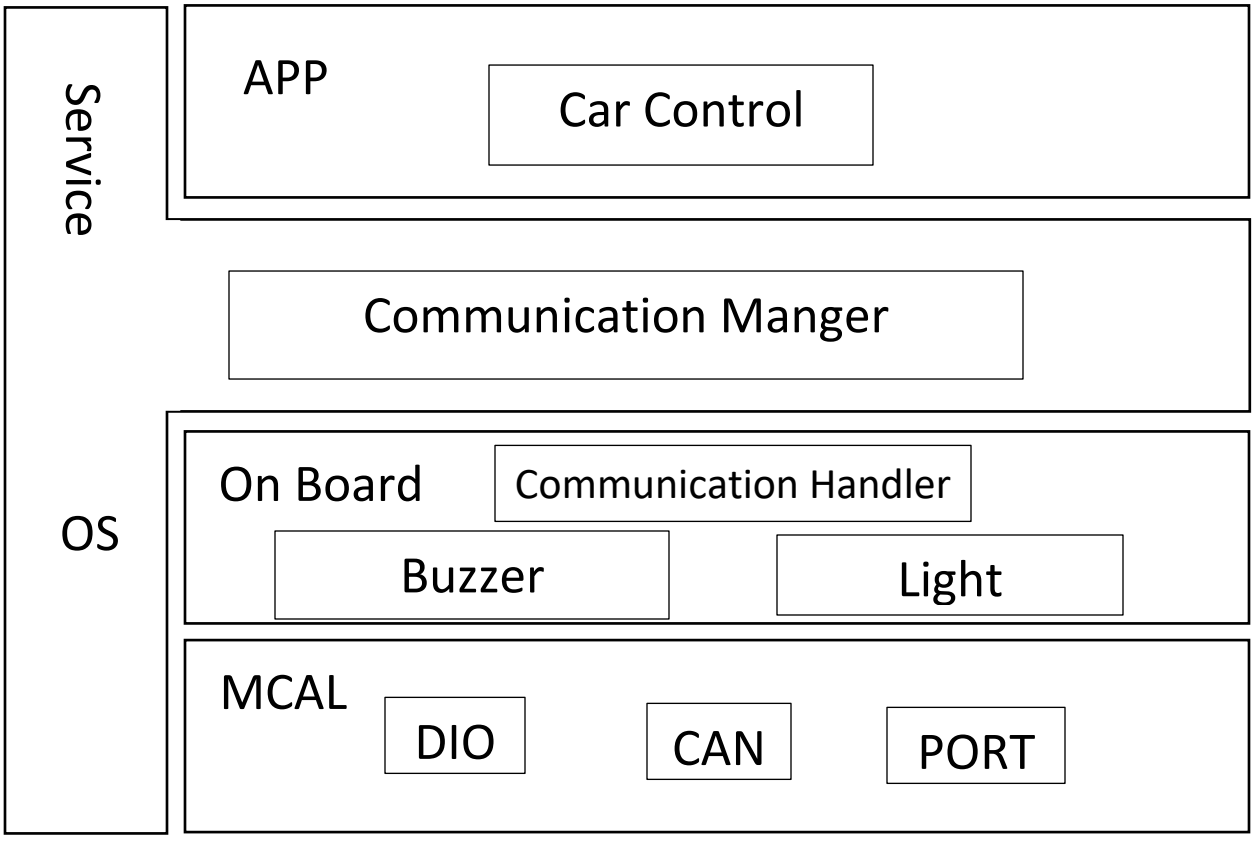
Name	**Get_LightButtonState**
Syntax	void Get_LightButtonState(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Void
Description	Get the Light Button State

2.14. Door State

Name	DoorState_Read
Syntax	void DoorState_Read(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Void
Description	Get the Speed of the car

ECU 2

1- Layered Architecture



2-full detailed APIs:

a. PORT

Name	**Port Init**
Syntax	void Port_Init(PortConfig_t* PortConfig)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	PortConfig
Parameters (out)	Non
Return Value	void
Description	Initialize Port Module

Name	**PortConfig_t**
Type	Struct
Description	A struct holds Port Initializations

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b. CAN

Name	**CAN Init**
Syntax	void CAN_Init(CANConfig_t* CANConfig)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	CAnConfig
Parameters (out)	Non
Return Value	void
Description	Initialize CAN Module

Name	**CAN Recieve Data**
Syntax	uint8 CAN_RecieveData(void)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Data
Return Value	uint8
Description	Receive Data Across CAN Module

Name	CANConfig_t
Type	Struct
Description	A struct holds CAN Initializations

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c- DIO

Name	**DIO Set Pin**
Syntax	void DIO_SetPin(DIOPort_t Port, DIOPin_t Pin, uint8 value)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	Port, Pin, Value
Parameters (out)	Non
Return Value	Void
Description	Set Pin Status

Name	**DIOPort_t / DIOPin_t**
Type	enum
Description	enum holds the Port / Pin Number

d- Buzzer

Name	**Buzzer_SetState**
Syntax	void Buzzer_SetState (uint8 State)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	State
Parameters (out)	Non
Return Value	Void
Description	Set Buzzer Status

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e- Lights

Name	**Lights_SetState**
Syntax	void Lights_SetState (uint8 State)
Sync/Async	Synchronous
Reentrancy	Reentrant
Parameters (in)	State
Parameters (out)	Non
Return Value	Void
Description	Set Lights Status

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f- Communication Handler

Name	**CH_Recieve**
Syntax	uint8 CH_ RecieveData(uint8 CH_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	CH_Id
Parameters (out)	Non
Return Value	uint8
Description	Choose The Bus and Get the Data From it

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e- Communication Manger

Name	**CM_ Recieve**
Syntax	uint8 CM_ RecieveData(uint8 CH_Id)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	CH_Id
Parameters (out)	Non
Return Value	uint8
Description	Choose The Bus and Get the Data From it

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f- Car Control

Name	**CarCtrl_UpdateState**
Syntax	void CarCtrl_UpdateState(viod)
Sync/Async	Synchronous
Reentrancy	Non-Reentrant
Parameters (in)	Non
Parameters (out)	Non
Return Value	Void
Description	Update the status of lights and buzzer according to the data sent from ECU 1