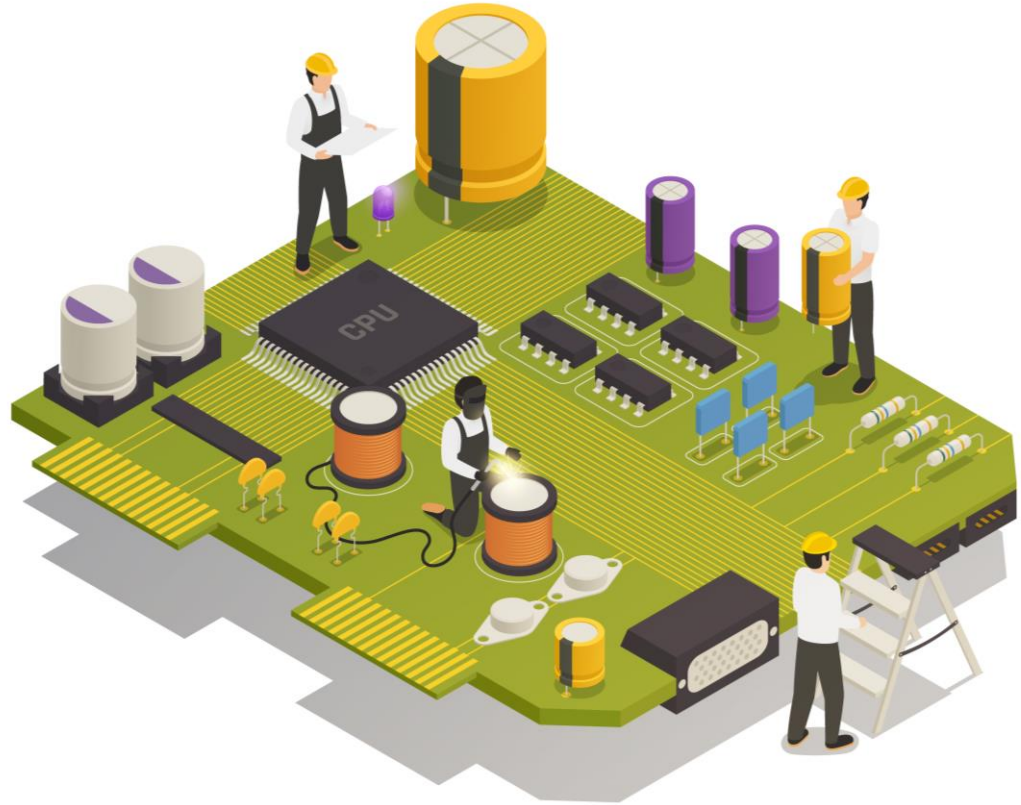
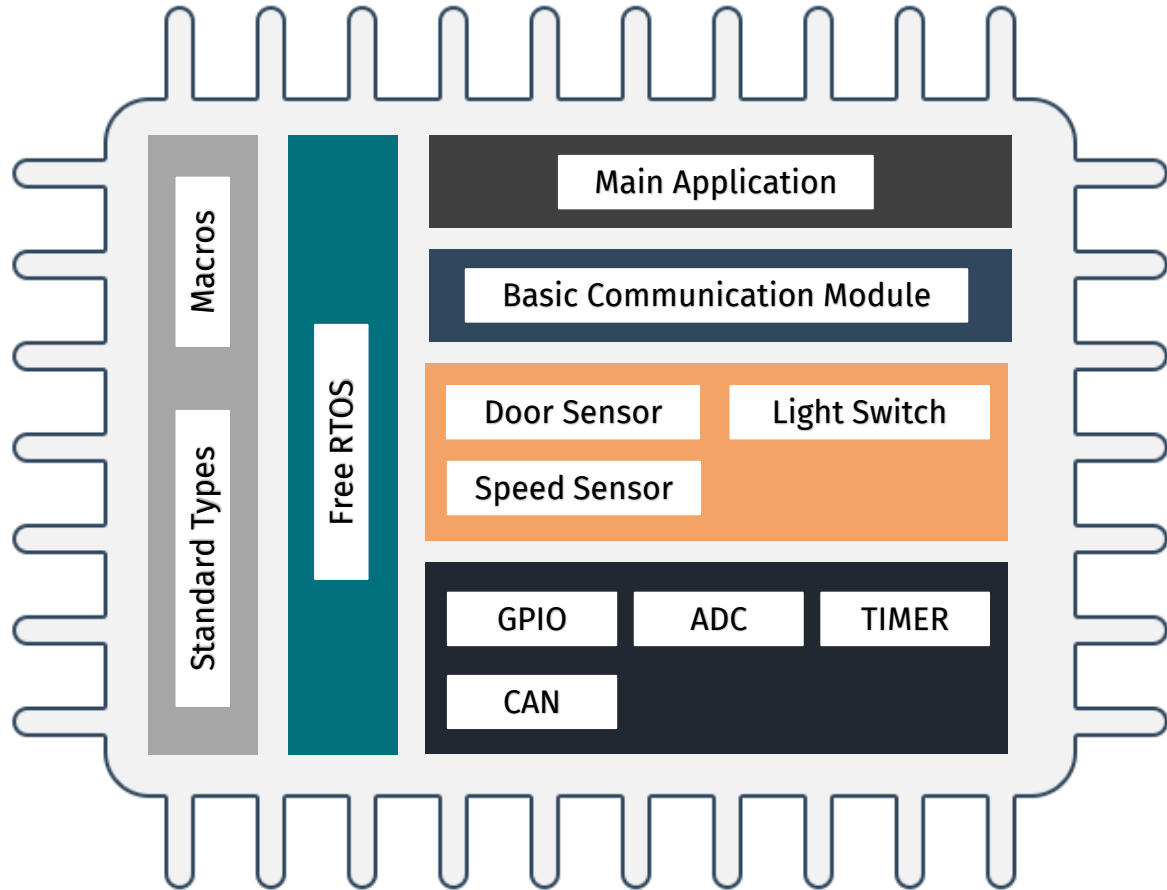
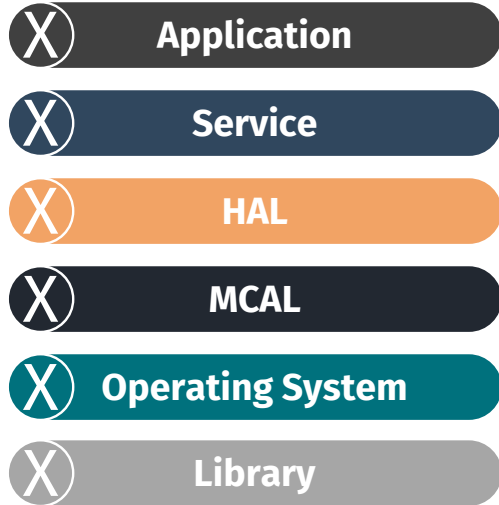


Static Desgin

Made By : Khaled El-Sayed



First Microcontroller



1 GPIO

Typedef	GPIOPort_t
Type	Unsigned Char
Description	Select The Specific Port To Write Or Read

Typedef	GPIOPin_t
Type	Unsigned Char
Description	Select The Specific Pin To Write Or Read

Typedef	GPIODir_t
Type	Unsigned Char
Description	Choose If This Pin Input Or Output

1

GPIO

Typedef	GPIOState_t
Type	Unsigned Char
Description	Select Logic Level For Any Pin

Typedef	StatusReturn_t
Type	Unsigned Char
Description	Check For Any Errors While Runtime

1 GPIO

Function Name	GPIO_Set_Pin_Direction
Arguments	GPIOPort_tPort, GPIOPin_tPin, GPIODir_tDirection
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configures Connected Pins I/O

1 GPIO

Function Name	GPIO_Set_Pin_Value
Arguments	GPIOPort_tPort, GPIOPin_tPin, GPIOState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Set Logic Level For Specific Pin

1

GPIO

Function Name	GPIO_Get_Pin_Value
Arguments	GPIOPort_tPort, GPIOPin_tPin,*Copy_Pu8Value
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Get Logic Level For Specific Pin

2 Timer

Typedef	TimerMode_t
Type	Unsigned Char
Description	Select Mode For The Timer

Typedef	TimerValue_t
Type	Unsigned Int
Description	Configure Value To Be loaded In Timer

Typedef	TimerState_t
Type	Unsigned Char
Description	Select Disable Or Enable Timer

2 Timer

Function Name	Timer_Initialization
Arguments	TimerMode_tMode, TimerState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	ASynchronous
Description	Configure Timer And Disable Or Enable It

2 Timer

Function Name	Timer_Start
Arguments	TimerValue_tValue
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	ASynchronous
Description	Set Start Value For The Timer

2 Timer

Function Name	Timer_End
Arguments	TimerValue_tValue
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	ASynchronous
Description	Set End Value For The Timer

3

CAN

Function Name	CAN_Initialization
Arguments	Void
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Initialize Can Protocol

3

CAN

Function Name	CAN_Transimit
Arguments	Copy_u16Data
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Send Data On Can Bus

4

ADC

Typedef	ADCPin_t
Type	Unsigned Char
Description	Select Desired Channel To Read Or Write

4

ADC

Function Name	ADC_Initialization
Arguments	Void
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Initialize Analog To Digital Module

4

ADC

Function Name	ADC_Read_Channel
Arguments	ADCPin_tChannel, *Copy_Pu16Value
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Get ADC Value

1 Door Sensor

Function Name	Door_Initialization
Arguments	GPIOPort_tPort, GPIOPin_tPin
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Pin And Port For Door Sensor

1 Door Sensor

Function Name	Door_Status
Arguments	*Copy_Pu8Value
Return Values	StatusReturn_t
Re-Entrancy	Reentrant
Sync / Async	Synchronous
Description	Get Door Status (1,0)

2 Light Switch

Function Name	Light_Switch_Initialization
Arguments	GPIOPort_tPort, GPIOPin_tPin
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Pin And Port For Light Switch

2 Light Switch

Function Name	Light_Switch_Status
Arguments	*Copy_Pu8Value
Return Values	StatusReturn_t
Re-Entrancy	Reentrant
Sync / Async	Synchronous
Description	Get Switch Status (1,0)

3 Speed Sensor

Function Name	Speed_Sensor_Initialization
Arguments	ADCPin_tChannel
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Pin For Speed Sensor

3 Speed Sensor

Function Name	Speed_Sensor_Status
Arguments	*Copy_Pu16Value
Return Values	StatusReturn_t
Re-Entrancy	Reentrant
Sync / Async	Synchronous
Description	Get Sensor Reading

1 BCM

Function Name	BCM_Manager
Arguments	Copy_u8Bus_Id
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Manage The Transmitted Data By CAN Bus

1 Main Application

Function Name	System_Initialization
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Initialize System Before Start Scheduler

1 Main Application

Function Name	Light_Switch_Task
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Periodic Task For Light Switch (20ms)

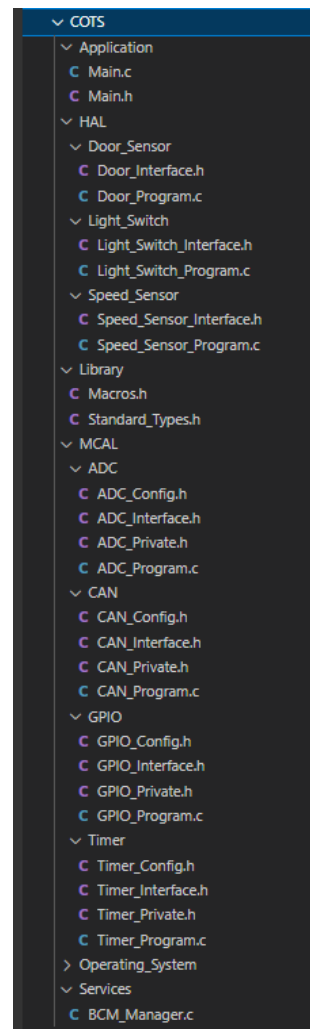
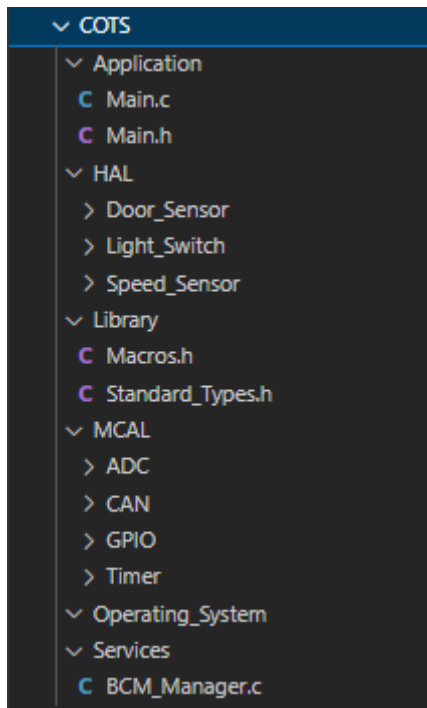
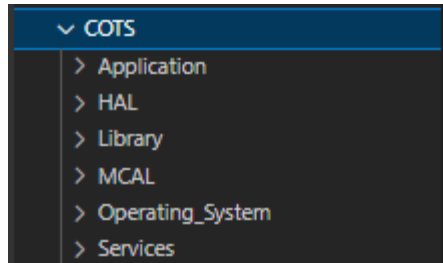
1 Main Application

Function Name	Door_Sensor_Task
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Periodic Task For Door Sensor (10ms)

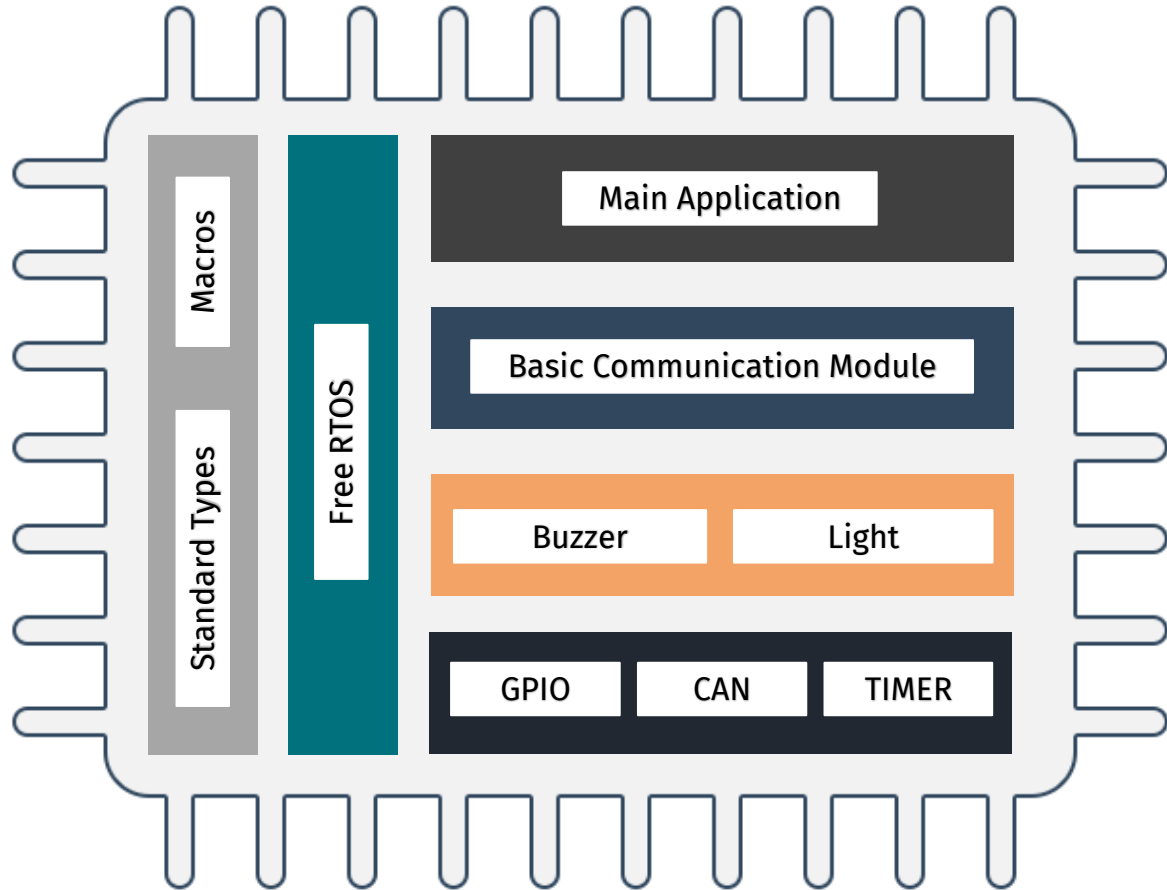
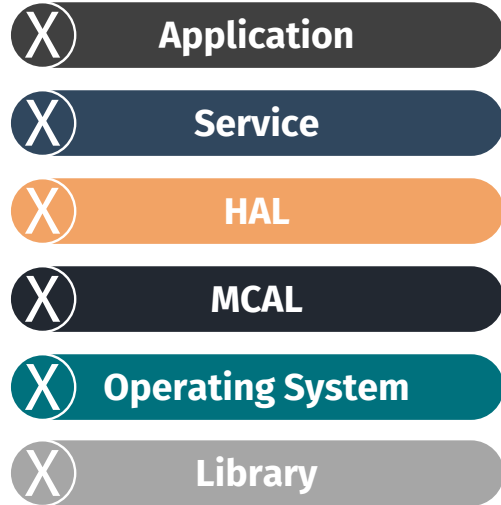
1 Main Application

Function Name	Speed_Sensor_Task
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Periodic Task For Speed Sensor (5ms)

Folder Structure



Second Microcontroller



1 GPIO

Typedef	GPIOPort_t
Type	Unsigned Char
Description	Select The Specific Port To Write Or Read

Typedef	GPIOPin_t
Type	Unsigned Char
Description	Select The Specific Pin To Write Or Read

Typedef	GPIONDir_t
Type	Unsigned Char
Description	Choose If This Pin Input Or Output

1

GPIO

Typedef	GPIOState_t
Type	Unsigned Char
Description	Select Logic Level For Any Pin

Typedef	StatusReturn_t
Type	Unsigned Char
Description	Check For Any Errors While Runtime

1 GPIO

Function Name	GPIO_Set_Pin_Direction
Arguments	GPIOPort_tPort, GPIOPin_tPin, GPIODir_tDirection
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configures Connected Pins I/O

1 GPIO

Function Name	GPIO_Set_Pin_Value
Arguments	GPIOPort_tPort, GPIOPin_tPin, GPIOState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Set Logic Level For Specific Pin

1 GPIO

Function Name	GPIO_Get_Pin_Value
Arguments	GPIOPort_tPort, GPIOPin_tPin,*Copy_Pu8Value
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Get Logic Level For Specific Pin

2 Timer

Typedef	TimerMode_t
Type	Unsigned Char
Description	Select Mode For The Timer

Typedef	TimerValue_t
Type	Unsigned Int
Description	Configure Value To Be loaded In Timer

Typedef	TimerState_t
Type	Unsigned Char
Description	Select Disable Or Enable Timer

2 Timer

Function Name	Timer_Initialization
Arguments	TimerMode_tMode, TimerState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Timer And Disable Or Enable It

2 Timer

Function Name	Timer_Start
Arguments	TimerValue_tValue
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Set Start Value For The Timer

2 Timer

Function Name	Timer_End
Arguments	TimerValue_tValue
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Set End Value For The Timer

3

CAN

Function Name	CAN_Initialization
Arguments	Void
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Initialize Can Protocol

3

CAN

Function Name	CAN_Receive
Arguments	Copy_u8Id, *Copy_Pu16Data
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Receive Data From CAN Bus

1 Buzzer

Function Name	Buzzer_Initialization
Arguments	Void
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Pin For Buzzer

1 Buzzer

Function Name	Buzzer_Status
Arguments	GPIOState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Turn On Or Off The Buzzer

2 Light

Typedef	LightControl_t
Type	Unsigned Char
Description	Select Left Or Right Light

2 Light

Function Name	Light_Initialization
Arguments	Void
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Configure Pins For Light

2 Light

Function Name	Light_Status
Arguments	LightControl_tSide, GPIOState_tState
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Turn On Or Off The Two Lights

1 BCM

Function Name	BCM_Manager
Arguments	*Copy_Pu8Sensor_Id, *Copy_Pu16Data
Return Values	StatusReturn_t
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Manage The Received Data By CAN Bus

1 Main Application

Function Name	System_Initialization
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Initialize Pins And System

1 Main Application

Function Name	Periodic_Task
Arguments	Void
Return Values	Void
Re-Entrancy	None Reentrant
Sync / Async	Synchronous
Description	Periodic Task To Get Received Data And Do Logic

Folder Structure

