

2-APIs

GPIO Module:

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|-------------|---|------------|---------------|
| API | Void GPIO_init(void) | | |
| Description | Initialize the GPIO with fixed configurations | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|--|------------|---------------|
| API | Void GPIO_write_Pin(u8 Port_Num,u8 pin_Num, U8 value); | | |
| Description | Write the required value on the specific Pin | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | Port num,pin num,pin value | Return | void |

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|-------------|--|------------|---------------|
| API | U8 GPIO_read_Pin(u8 Port_Num,u8 pin_Num,); | | |
| Description | Read the value from the gpio pin | | |
| Sync/Async | sync | Reentrancy | Non reentrant |

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|------------|----------------------------|--------|----|
| Parameters | Port num,pin num,pin value | Return | U8 |
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CAN Module:

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|-------------|--|------------|---------------|
| API | Void CAN_init(void); | | |
| Description | Initialize the CAN with fixed configurations | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|--|------------|---------------|
| API | Void CAN_transmit(u8 CanPin_ID,u64 message); | | |
| Description | Send a required message via specific pin id | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | Can pin number,message | Return | void |

Speed Sensor Module;

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|-------------|--|------------|---------------|
| API | Void SpeedSensor_init(void) | | |
| Description | Initialize the SpeedSensor with fixed configurations | | |
| Sync/Async | sync | Reentrancy | Non reentrant |

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|------------|------|--------|------|
| Parameters | void | Return | void |
|------------|------|--------|------|

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|-------------|---------------------------------------|------------|---------------|
| API | U16 SpeedSensor_getSpeed(void) | | |
| Description | Get the speed from the sensor via adc | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | U16 |

Door Sensor Module:

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|-------------|--|------------|---------------|
| API | Void DOORSensor_init(void) | | |
| Description | Initialize the door sensor with fixed configurations | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|-------------------------------|------------|---------------|
| API | U8 DoorSensor_getStatus(void) | | |
| Description | Read the door sensor status | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | U8 |

Light Switch Module:

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|-------------|---|------------|---------------|
| API | Void LightSwitch_init(void) | | |
| Description | Initialize the light switch with fixed configurations | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|--------------------------------|------------|---------------|
| API | U8 LightSwitch_getStatus(void) | | |
| Description | Read the light switch status | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | U8 |

Sensor handler Module:

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|-------------|----------------------------------|------------|---------------|
| API | U32 Sensor_handler(u8 sensor_ID) | | |
| Description | Choose which sensor to read from | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | U8 Sensor id | Return | U32 |

Communication handler Module:

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|-------------|--|------------|---------------|
| API | Void BCM_handler(u64 handler_Message,u8 bus) | | |
| Description | Choose which bus to read from | | |
| Sync/Async | sync | Reentrancy | Non reentrant |

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|------------|------------------------|--------|------|
| Parameters | U64 message ,u8 bus | Return | void |
|------------|------------------------|--------|------|

Sensor manger Module:

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|-------------|---|------------|---------------|
| API | U32 sensor_manger(u8 sensor_id) | | |
| Description | Make the app layer to choose the sensor | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | Sensor id | Return | void |

Basci Communication manger Module:

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|-------------|--|------------|---------------|
| API | Void BCM_Manger(u64 Manger_Message,u8 bus) | | |
| Description | Make the app layer to choose the bus | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | Message,bus | Return | void |

Data Save Module:

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|-------------|-------------------------|------------|---------------|
| API | U32 Data_Save(u64 data) | | |
| Description | Save the required data | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | data | Return | void |

Application Module:

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|-------------|-----------------------------|------------|---------------|
| API | Void SensorDoorState(void) | | |
| Description | Send the door state via can | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|-------------------------------|------------|---------------|
| API | Void SendSpeed(void) | | |
| Description | Send the speed sensor via can | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|-------------|-------------------------------------|------------|---------------|
| API | Void SendLightSwitchState(void) | | |
| Description | Send the light switch state via can | | |
| Sync/Async | sync | Reentrancy | Non reentrant |
| Parameters | void | Return | void |

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|---------------|----------------------|---------|-----------------|
| MCAL | HAL | Service | App |
| Systick. c | Sensor_handler. c | Os.c | Data_save. c |

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|--------|----------------|-------------------|--------|
| ADC.c | Comm_handler.c | Basic_comm_mngr.c | Main.c |
| CAN.c | Light_switch.c | Sensor_mngr.c | |
| GPIO.c | Door_sensor.c | | |
| | Speed_sensor.c | | |

Header files folder:

| | | | |
|----------------|-----------|-------------|--|
| systick | os | door | |
| Sensor_handler | Std_lib | Data_save | |
| Speed | CAN | Sensor_mngr | |
| Common_macros | switch | Comm_mngr | |
| ADC | memoryMap | | |
| Comm_handler | gpio | | |