Modulename	SWlayer		Dependancies				
DIO DRIVERS	ECU HW drivers		Dependancies				
	ECU HW drivers		GPIO DRIVERS				
	ECU HW drivers		GPIO DRIVERS				
GPT DRIVERS	ECU HW drivers		OI IO DIVIVEIXO				
switchdriver	ONBOARD layer		GPIO DRIVERS				
	ONBOARD layer		GPIO DRIVERS				
speed sensor	ONBOARD layer		GPIO DRIVERS	GPT DRIVERS	ADC DRIVERS		
comm handler	ONBOARD layer		CAN DRIVERS	GF I DIVIVEIX	ADC DIVIVERS		
Comm. manger	Service layer		Comm. Handler				
APP	APP layer		switchdriver	dooroonoordrivo	speed sensor dri	vor	oomm manager
OS	system layer		ECU HW drivers		speed sensor un	vei	comm manager
DIO API	system layer		ECO HW drivers	AFF			
name	DIO_PIN_t						
	•						
type	Enumeration						
range	0:rangof pins						
description	enum listing pins	•					
name	DIO BORT +						
name	DIO_PORT_t						
type	Enumeration						
range	0:rangof Ports						
description	enum listing port	S					
name	DIO_PIN_DIR_t						
type	Enumeration						
range	PIN_INPUT	0					
	PIN_OUTPUT	1					
description	enum listing pins	S DIR					
name	DIO_PORT_DIR	<u>_t</u>					
type	uint32						
range	0:all pins ar 1						
description	ports DIR						
name	DIO_PORT_LEV	/EL_t					
type	uint32						
range	0:all pins ar 1						
description	PORT LEVELS						
name	DIO_PIN_LEVEL	L_t					
type	Enumeration						
range	PIN_LOW		PIN IS LOW				
	PIN_HIGH		PIN IS HIGH				
description	enum listing PIN	LEVELS					
	<b></b>						
name	PIN_ALTR_FUN	C_t					
type	Enumeration						
range							
description	enum listing PIN	alternative functions					
function name	DIO_Init						
arguments	NONE						
return	NONE						
description	init GPIO pins ar	nd their altrnative funct. from o	onfig file				
function name	DIO_SET_PORT	Г					
arguments	input	PORTNUM	DIO_PORT_t				
		the port needed to set					
		PORT_LEVEL	DIO_PORT_LEV	/EL_t			
		port LEVEL					

return	NONE				
description	set port value				
description	set port value				
function name	DIO CET DIN				
function name	DIO_SET_PIN		510 5111 /		
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin u want to set as	-		
		PORTNUM	DIO_PORT_t		
		the port of that pin			
		PIN_LEVEL	DIO_PIN_LEVEL_T		
		PIN LEVEL			
return	NONE				
description	set pin value				
function name	DIO_TOG_PIN				
arguments	input	PIN_NUM	DIO_PIN_t		
a.gae.	put	the pin u want to set as			
		PORTNUM	DIO_PORT_t		
		the port of that pin	DIO_FORT_t		
	NONE	the port of that pin			
return	NONE				
description	Toggle pin				
function name	DIO_TOG_POR				
arguments	input	PORTNUM	DIO_PORT_t		
		the port of that pin			
return	NONE				
description	Toggle port				
function name	DIO_SET_PIN_	DIR			
arguments	input	PIN_NUM	DIO_PIN_t		
argamonto	input	the pin u want to set as			
		PORTNUM	DIO_PORT_t		
			DIO_FORT_t		
		the port of that pin	DIO DIN DID T		
		PIN_DIR	DIO_PIN_DIR_T		
		pin direction			
return	NONE				
description	set pin dir				
function name	DIO_SET_POR	T_DIR			
arguments	input	PORTNUM	DIO_PORT_t		
		the port			
		PORT_DIR	DIO_PORT_DIR_T		
		PORT direction			
return	NONE				
description	set port dir				
puon					
function name	DIO_SET_PIN_	ΔITR			
	_		DIO DIN +		
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin u want to set as			
		PORTNUM	DIO_PORT_t		
		the port			
		PIN_ALTR	PIN_ALTR_FUNC_t		
		pin alternative func			
return	NONE				
description	set pin as altern	ative func			
GPT API					
function name	TIMER_Init				
Tarrottori Harrio					
	NONE				
arguments return	NONE				
arguments	NONE	Q , PRESCALE , FUNC B	ASED ON CONFIG		

name	TIMED NILIM T					
name	TIMER_NUM_T Enumeration					
type	_	DED				
range	0:TIMERS NUMI					
description	enum listing ALL	TIMERS				
function name	TIMERCOUNTE	D CLD				
arguments	INPUT	TIMER_NUM	TIMED NI IM T			
arguments	INFOI	which timer to use	TIMER_NUM_T			
return	NONE	Willer to use				
description	clr the counter or	timer velue				
description	Cir the counter of	unier value				
function name	TIMERCOUNTE	D STADT				
arguments	INPUT	TIMER_NUM	TIMER_NUM_T			
arguments	INFOI	which timer to use	TIMEK_NOW_I			
return	NONE	Willer to use				
description	start the counter	or timer value				
description	Start the Counter	or timer value				
function name	TIMERCOUNTE	D STOD				
arguments	INPUT	TIMER_NUM	TIMER_NUM_T			
arguments	1141 01	which timer to use	THVILT _ INOIVI_ I			
return	NONE	windi unici lu use				
description	STOP the counte	ar or timer value				
чезыниин	o i Or the Counte	or uniter value				
function name	TIMERCOUNTE	D CET				
arguments	INPUT	TIMER_NUM	TIMER_NUM_T			
arguments	INFOI	which timer to use	TIMEK_NOW_I			
return	NONE	which timer to use				
	GET the counter	or timor value				
description CAN API	GET the counter	or timer value				
	CAN MCC 4					
name	CAN_MSG_t					
type elements	structure CAR_STATE_S	C M	the data is cr sta	to		
description	<del>-</del>	ne msg data the can protocol		ie		
description	a struct to note ti	le msg data me cam protocor	wiii seriu			
function name	CAN_Init					
arguments	NONE					
return	NONE					
description	init CAN protocol	L with config				
description	IIII CAN protocol	i with coming				
function name	CAN_SEND					
arguments	input	CAN_MSG_t	msg			
arguments	input	the msg that will be sent	msg			
return	NONE	the may that will be sent				
description	CAN SEND MSC	S CIVIN				
description	OVIA OFIAD IAIO	JOIVIN				
function name	CAN_RESCEVE					
arguments	NONE					
return	CAN_MSG_t					
description	<del>-</del>	from another ECU				
COOMPRON	Jan redieve may					
switch model AF	PI					
name	switch_state_t					
type	Enumeration					
range	SWITCH_OFF	n	switch not presse	ed		
	J	0		-		
rungo	SWITCH ON	1	switch present			
	SWITCH_ON		switch pressed			
description	SWITCH_ON enum listing swit		switch pressed			
	<del>-</del>		switch pressed			
	<del>-</del>		switch pressed			

type	Uint32 *						
description	an array hold all	the HW Port Adresses					
	,						
function name	Switch_Init						
		PIN_NUM	DIO DINI +				
arguments	input		DIO_PIN_t				
		the pin u want to set as ar					
		PORTNUM	DIO_PORT_t				
		the port of that pin					
return	NONE						
description	init switch input p	pin					
function name	Get_Switch_State	te					
arguments	input	PIN_NUM	DIO_PIN_t				
		the pin u want to set as ar	n input				
		PORTNUM	DIO_PORT_t				
		the port of that pin					
return	switch_state_t						
description		nd _PORT_ARR and switc	h pin port structure	to get the state of	the switch 0 for i	not pressed . 1 for	pressed
	<u> </u>			<u> </u>			
door API							
name	door_state_t						
type	Enumeration						
	_		0 door is alosed				
range	DOOR_CLOSEI	<b>-</b>	0 door is closed				
doporinting	DOOR_OPEN	ur atataa	1 door is open				
description	enum listing doo	or states					
name	_PORT_ARR						
type	Uint32 *						
description	an array hold all	the HW Port Adresses					
function name	DoorSensorInit						
arguments	input	PIN_NUM	DIO_PIN_t				
		the pin u want to set as ar	n input				
		PORTNUM	DIO_PORT_t				
		the port of that pin					
return	None						
description	init the door sens	sor input pin					
function name	Get_DoorSenso	r State					
arguments	input	PIN_NUM	DIO_PIN_t				
argumento	прис	the pin u want to set as ar					
		PORTNUM	DIO_PORT_t				
			DIO_FORT_L				
	daan -t-t -t	the port of that pin					
eturn	door_state_t			)	4 fan ann		
description	using DIO API ai	nd _PORT_ARR to get the	state of the switch (	o for not pressed ,	ı ror pressed		
motion API							
name	motion_state_t						
ype	Enumeration						
type	NOT MOVING		0 car isn't moving				
	NOT_MOVING						
	MOVING		1 car is moving				
range		tion states	1 car is moving				
range	MOVING	tion states	1 car is moving				
description	MOVING enum listing mot	tion states	1 car is moving				
description	MOVING	tion states	1 car is moving				
description	MOVING enum listing mot _PORT_ARR Uint32 *	tion states the HW Port Adresses	1 car is moving				

6 t'	0					
function name	SpeedSensorInit		DIO 5''' :			
arguments	input	PIN_NUM	DIO_PIN_t			
		the pin u want to set as an ir				
		PORTNUM	DIO_PORT_t			
		the port of that pin				
return	None					
description	init the motionse	nsor input pin might init the Ti	mer			
function name	Get_SpeedSens	or_State				
arguments	None					
return	motion_state_t					
description		PIO APIs to get the motion st	ate			
can handler API						
name	can_handler_ms	sa s				
type	structure					
elements	comm_manger_	msa s	C_M_S	the msg from co	mm manager	
Cicinonio	e2		0_111_0	optional can har		
description		⊥ :omm_manger_msg_s and ca	n handler naddin		laici padaing	
COOLIDEOLI	a stract to floid to	mangor_mog_s and ca		3		
function name	CAN_HANDLER	) INIT				
	None					
arguments	NONE					
return		rotocol wood based "				
description	iriit trie comm. pr	rotocol used based on config				
function name	CAN_HANDLER					
arguments	input	comm_manger_msg_s	C_M_S			
		the comm manger msg struc	tre			
return	NONE					
description	send the can_ha	ndler_msg_s msg using can	API			
function name	CAN_HANDLER	R_RCV				
arguments	NONE					
return	comm_manger_	msg_s				
description	return the comm	_manger_msg_s receved from	n theCAN using	CAN API		
comm manger A	\PI					
name	comm_manger_	msg_s				
type	structure					
elements	CAR_STATE_S	_C_S	have the door s	tate		
	e2		optional comm	manger padding		
description	a struct to hold a	Ill the states and comm mang	•			
			_			
name	protocol t					
type	Enumeration					
range		ocol that can be used				
description	-	the ECU comm protocols				
COOMPTION	Juliani noung tile	200 comm protocola				
function name	CONNA NANNAO	ED INIT				
function name	COMM_MANAG	ER_INIT				
arguments	None	ER_INIT				
arguments return	None NONE					
arguments	None NONE	ER_INIT  . protocols used based on cor	nfig			
arguments return description	None NONE init all the comm	. protocols used based on cor	nfig			
arguments return	None NONE	. protocols used based on cor ER_send				
arguments return description	None NONE init all the comm	. protocols used based on cor	nfig			
arguments return description function name	None NONE init all the comm COMM_MANAG	. protocols used based on cor ER_send				

		the made and consider						
	NONE	the protocol used to send						
return	NONE							
description	send msg using	the choosed protocol API as o	comm_manger_msg_s					
function name	COMM_MANAG							
arguments	input	protocol_t	protocol					
		the protocol used to send						
return	CAR_STATE_S							
description	rcv car state usir	ng that comm protocol API						
арр								
name	car_state_t							
type	Enumeration	_						
range	N_C_S			sed, door is closed				
	N_C_M			sed, door is closed				
	N_O_S			sed, door is open ,	-			
	N_O_M			sed, door is open ,				
	P_C_S			door is closed ,ca				
	P_C_M			door is closed ,ca				
	P_O_S		· ·	door is open ,car i	-			
danasis tis	P_O_M		switch pressed,	door is open ,car i	s moving			
description	enum listing the	car sensors states						
name	CAR_STATE_S							
type	structure							
elements	door_state_t	_D_S	have the door state					
	motion_state_t	_M_S	have the motion					
	switch_state_t	_S_S	have the switch					
	car_state_t	_C_S		te which will be the	e result of the thre	ee		
description	a struct to hold a	Ill the states and change it in	tne run time					
	CTATEC							
name	STATES							
type	CAR_STATE_S	atmost use the at will and the ate	 					
description	that is the global	structure that will set the sta	tes in					
formation manner	avvitab atata taa	i.						
function name	switch_state_tas	K						
arguments periodacity	NONE 20ms							
	NONE							
return description	_	l ch_state_t and new car_state	t in the STATES	S alobal variable u	eina ewitch ΛDI			
description	setting new switt	in_state_t and new car_state	ENTINE STATES	giobai variable u	Sing Switch AFT			
function name	door state task							
arguments	door_state_task NONE							
periodacity	10ms							
return	NONE							
description		_state_t_and new car_state_	t in the STATES	dohal variable usi	ng door API			
acourption	Jetting new door	_otate_t and new cal_state_	CHILLE STATES	giobai variable usi	ng door AFT			
function name	motion_state_tas	sk						
	NONE	JIX						
arguments							-	
periodacity return	5ms NONE							
	_	on state t and new cor state	tin the STATE	S alobal variable :	Ising motion API			
description	seung new moti	on_state_t and new car_state	_ in the STATE	o giobai variabie t	ising motion API			
function name	data aand task							
function name	data_send_task							

arguments	NONE					
periodacity	5ms					
return	NONE					
description	sending the STATES global variable as a msg using the can protocol using COMM_MANAGER_SEND					