Modulename	SWlayer		Dependancies			
DIO DRIVERS	ECU HW drivers		2 0000000000000000000000000000000000000			
ADC DRIVERS	ECU HW drivers		GPIO DRIVERS			
CAN DRIVERS	ECU HW drivers		GPIO DRIVERS			
GPT DRIVERS	ECU HW drivers		OF TO BELLVEING			
LEFTLIGHT	ONBOARD layer		GPIO DRIVERS			
RIGHTLIGHT	ONBOARD layer		GPIO DRIVERS			
BUZZER	ONBOARD layer		GPIO DRIVERS	CDT DDIVEDS		
comm handler	ONBOARD layer		CAN DRIVERS	OF T DIVIVERS		
Comm. manger	Service layer		Comm. Handler			
APP	APP layer		LEFTLIGHR	RIGHTLIGHT	BUZZER	nomm manager
OS	-		ECU HW drivers		BUZZEK	comm manager
DIO API	system layer		ECO HW drivers	APP		
	DIO DIN A					
name	DIO_PIN_t Enumeration					
type						
range	0:rangof pins					
description	enum listing pins					
	DIO 505= :					
name	DIO_PORT_t					
type	Enumeration					
range	0:rangof Ports					
description	enum listing ports	3				
name	DIO_PIN_DIR_t					
type	Enumeration					
range	PIN_INPUT	0				
	PIN_OUTPUT	1				
description	enum listing pins	DIR				
name	DIO_PORT_DIR_	_t				
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	t				
type	Enumeration					
range	PIN_LOW	0	PIN IS LOW			
	PIN_HIGH	1	PIN IS HIGH			
description	enum listing PIN					
	J					
name	PIN_ALTR_FUNG	C_t				
type	Enumeration	_				
range	-					
description	enum listina PIN	alternative functions				
function name	DIO_Init					
arguments	NONE					
return	NONE					
Totalii	TOTAL					

init GPIO pins a	nd their altrnative funct. from	m config file			
DIO SET POR					
_		DIO PORT t			
		DIO PORT LEVI	EL t		
	_		<u>_</u> ,		
NONE	port LL V LL				
oct port value					
DIO SET PIN					
_	PIN NIIM	DIO PIN t			
Прис	_				
		DIO_FORT_t			
		DIO DIN LEVEL	т		
		DIO_PIN_LEVEL	_'		
NONE	INLLVEL				
set pin value					
DIO TOO DIE					
	DIAL ALLIA	DIO DIN 1			
input					
		DIO_PORT_t			
	the port of that pin				
Toggle pin					
DIO TOG POR	RT				
	PORTNUM	DIO_PORT_t			
	the port of that pin				
NONE					
Toggle port					
DIO SET DIN	DID				
_		DIO DIN +			
прис					
		DIO_FORT_L			
		DIO DIN DID T			
		DIO_PIN_DIR_I			
NONE	piri direction				
<u> </u>					
set pin dir					
DIO_SET POR	 T_DIR				
input	PORTNUM	DIO_PORT_t			
-					
		DIO PORT DIR	T		
	-	_ :=	-		
NONE					
-					
set port dir					
	DIO_SET_POR input NONE set port value DIO_SET_PIN input NONE set pin value DIO_TOG_PIN input NONE Toggle pin DIO_TOG_POR input NONE Toggle port NONE Toggle port DIO_SET_PIN_ input NONE Toggle port	DIO_SET_PORT input PORTNUM the port needed to set PORT_LEVEL port LEVEL NONE set port value DIO_SET_PIN input PIN_NUM the pin u want to set as a PORTNUM the port of that pin PIN_LEVEL PIN LEVEL NONE set pin value DIO_TOG_PIN input PIN_NUM the pin u want to set as a PORTNUM the pin u want to set as a PORTNUM the port of that pin NONE Toggle pin DIO_TOG_PORT input PORTNUM the port of that pin NONE Toggle port DIO_SET_PIN_DIR input PIN_NUM the port of that pin NONE Toggle port DIO_SET_PIN_DIR input PIN_NUM the port of that pin NONE Toggle port DIO_SET_PIN_DIR input PIN_NUM the port of that pin PIN_DIR pin direction NONE set pin dir DIO_SET_PORT_DIR input PORTNUM the port of that pin PIN_DIR pin direction NONE Set pin dir DIO_SET_PORT_DIR input PORTNUM the port PORT_DIR pORT_DIR pORT_DIR pORT_DIR pORT_DIR PORT_DIR PORT_DIR PORT_DIR	input PORTNUM DIO_PORT_t the port needed to set DIO_PORT_LEVI PORT_LEVEL DIO_PORT_LEVI NONE Set port value DIO_SET_PIN Interpretation of the port of the port of that pin input PIN_NUM DIO_PIN_t the pin u want to set as an input PORTNUM DIO_PORT_t the port of that pin PIN_LEVEL DIO_PIN_LEVEL PIN LEVEL PIN_LEVEL DIO_PIN_t NONE Set pin value Interpretation of the pin upon of the pin upon of the pin upon of the port of that pin DIO_PORT_t NONE Toggle pin DIO_PORT_t DIO_TOG_PORT Interpretation of the pin upon of the pin upon of the port of that pin DIO_PORT_t NONE Toggle port DIO_PORT_t DIO_SET_PIN_DIR DIO_PORT_t Input PIN_NUM DIO_PORT_t the pin u want to set as an input PORTNUM DIO_SET_PIN_DIR DIO_PORT_t input PIN_DIR DIO_PORT_t the port of that pin PIN_DIR pin direction PORT_DIR	DIO_SET_PORT input PORTNUM	DIO_SET_PORT

arguments	input	PIN_NUM	DIO_PIN_t
J	•	the pin u want to set as a	
		PORTNUM	DIO_PORT_t
		the port	-102 01112
		PIN_ALTR	PIN_ALTR_FUNC_t
		pin alternative func	, ingrand, eneg
return	NONE	pin alternative rane	
description	set pin as alterna	ative func	
GPT API	oct piii do diterri		
function name	TIMER_Init		
arguments	NONE		
return	NONE		
description	<u>-</u>	⊥ Q , PRESCALE , FUNC BA	ASED ON CONFIG
docemption	IIII TIWETT TE	, 111207122, 1011027	LEED ON COMMIC
name	TIMER_NUM_T		
type	Enumeration		
range	0:TIMERS NUM	BFR	
description	enum listing ALL		
2 3 Comption	July Hourig ALL		
function name	TIMERCOUNTE	R CLR	
arguments	INPUT	TIMER_NUM	TIMER_NUM_T
a.gamonto		which timer to use	
return	NONE	Willor timer to doc	
description	clr the counter o	r timer value	
description	ch the counter o	Turrier value	
function name	TIMERCOUNTE	R START	
arguments	INPUT	TIMER_NUM	TIMER_NUM_T
argamento	1141 01	which timer to use	TIMEN_NOM_T
return	NONE	Willon timer to disc	
description	start the counter	or timer value	
description	otart tire odanter	or timer value	
function name	TIMERCOUNTE	R STOP	
arguments	INPUT	TIMER NUM	TIMER_NUM_T
arguments	1141 01	which timer to use	TIIWEIX_NOW_1
return	NONE	Willest times to use	
description	STOP the count	er or timer value	
description	OTOT the count	er or timer value	
function name	TIMERCOUNTE	R GET	
arguments	INPUT	TIMER_NUM	TIMER_NUM_T
a.gamonto		which timer to use	
return	NONE	on three to do	
description	GET the counter	or timer value	
CAN API	SE. LIO SOUTHO	The state of the s	
name	CAN_MSG_t		
type	structure		
elements	can_handler_ms	Sa s	can handeler msg
3.1.0.1.0	e3	-5	pading
description	<u>-</u>	he msg data the can prote	ocol will send with som padding
	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	g	
function name	CAN_Init		
arguments	NONE		
	NONE		
return			
return description	init CAN protoco	l with config	

function name	CAN_SEND				
arguments	input	CAN_MSG_t	msg		
ga		the msg that will be sent	eg		
eturn	NONE	and mag and, min do don.			
description	CAN SEND MSC	GIVIN			
accomption	07 11 0E 11 10 10 10 10 10 10 10 10 10 10 10 10	S GIVIII			
function name	CAN_RESCEVE				
arguments	NONE				
return	CAN_MSG_t				
description	<u> </u>	from another ECU			
20001Pti011	odii redieve mog	TIOTI GITOTION EGO			
LEFTLIGH/RIGH	T API				
name	LIGHT_STATE_t				
type	Enumeration				
range	LIGHT_OFF	0	LIGHT OFF		
	LIGHT_ON	1	LIGHT ON		
description	enum listing light				
	<u> </u>				
name	_PORT_ARR				
type	Uint32 *				
description		the HW Port Adresses			
function name	light_Init				
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin u want to set as an o	utput		
		PORTNUM	DIO_PORT_t		
		the port of that pin			
return	NONE				
description	init light output p	in			
function name	SET_LIGHT				
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin of output			
		PORTNUM	DIO_PORT_t		
		the port of that pin			
		lightval	LIGHT_STATE_t		
		on / off			
return	NONE				
description	using DIO API ar	nd _PORT_ARR and to on / o	off light		
ouzzer API					
name	BUZZER_STATE	<u>_t</u>			
type	Enumeration				
range	BUZZER_ON		BUZZER OFF		
	BUZZER_OFF		BUZZER ON		
description	enum listing buz	zer states			
name	_PORT_ARR				
	11:-420 *				
type description	Uint32 *	the HW Port Adresses			

function name	buzzerInit				
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin u want to set as a			
		PORTNUM	DIO_PORT_t		
		the port of that pin			
eturn	None				
description	init the buzzer o	utnut nin			
description	militure buzzer o	atput piii			
function name	CET DUZZED				
	SET_BUZZER	DINI NILIM	DIO DIN 4		
arguments	input	PIN_NUM	DIO_PIN_t		
		the pin of output			
		PORTNUM	DIO_PORT_t		
		the port of that pin			
		buzzervalue	BUZZER_STAT	E_t	
		on/off			
return	NONE				
description	using DIO API a	and _PORT_ARR and to or	n / off BUZZER		
can handler API					
name	can_handler_m	sg_s			
type	structure				
elements	comm_manger_	msq s	C_M_S	the msg from comm manager	
	e2			optional can handler padding	
description		_ comm_manger_msg_s and	can handler paddin	-	
description	a struct to note		can nander paddin	9	
	CAN HANDLE	DINIT			
function name	CAN_HANDLE	₹_INIT			
arguments	None				
return	NONE				
description	init the comm. p	rotocol used based on conf	fig		
function name	CAN_HANDLE	R_SEND			
arguments	input	comm_manger_msg_s	C_M_S		
		the comm manger msg st	tructre		
return	NONE				
description	send the can ha	andler_msg_s msg using ca	an API		
	_				
function name	CAN_HANDLE	R RCV			
arguments	NONE				
		meg e			
return	comm_manger_		from the CAN	CANADI	
description	return the comn	n_manger_msg_s receved	ITOTTI THECAN USING	CAN AM	
comm manger A					
name	comm_manger_	_msg_s			
ype	structure				
elements	CAR_STATE_S	_C_S	have the door s	tate	
	e2		optional comm i	manger padding	
description	a struct to hold	all the states and comm ma	inger padding		
name	protocol_t				
	-				
	Enumeration				
type	Enumeration	ocol that can be used			
	lis of all the prot	ocol that can be used the ECU comm protocols			

function news	CONANA NAANIAO	PED INIT					
function name	COMM_MANAG	EK_INH					
arguments return	NONE						
description		protocols used based on co	nfia				
uescription	init all the commi	. protocois used based off co	ing				
function name	COMM_MANAG	ER send					
arguments	input	CAR_STATE_S	C_S				
9 - 1	<u> </u>	the car state structre					
		protocol t	protocol				
		the protocol used to send					
return	NONE						
description	send msg using	the choosed protocol API as	comm manger ms	sg s			
	0 0						
function name	COMM_MANAG	ER_rcv					
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		switch not presse	ed, door is closed	,car not moving		
	N_C_M		switch not pressed, door is closed ,car is moving				
	N_O_S		2 switch not presse	ed, door is open ,	car not moving		
	N_O_M		3 switch not presse	ed, door is open ,	car is moving		
	P_C_S	4	4 switch pressed, o	door is closed ,ca	not moving		
	P_C_M	!	switch pressed, door is closed ,car is moving				
	P_O_S	(switch pressed, door is open ,car not moving				
	P_O_M		7 switch pressed, o	door is open ,car i	s moving		
description	enum listing the	car sensors states					
	CAD STATE S						
name	CAR_STATE_S structure						
type elements		D S	have the door sta	ato.			
CICITICITIS	door_state_t motion_state_t	_D_S _M_S		have the motion state			
	switch_state_t	_M_S _S_S	have the switch s				
	car_state_t	_S_S _C_S			e result of the three	<u>,</u>	
description	_	\mid _O_S ill the states and change it \mid ir		C WINCH WIII DE [[II	s result of tile tillet	•	
acscription	a struct to fiold a	iii iiie siaies anu change it ii	i die run dine				
name	STATES						
type	CAR_STATE_S						
description		structure that will set the sta	ates in				
	<u> </u>						
		1.					
function name	buzzer_light_tas	K					
function name	buzzer_light_tas NONE	K					
	_	K					

description	depending on the STATES SET LIGHT , BUZZER using thier API					
function name	data_RCV_task					
arguments	NONE					
periodacity	event triggerd with high priority					
return	NONE					
description	rcv the msg and set the STATES global variable using the can protocol using COMM_MANAGER_SEND					