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		
	<del>-</del>	_ :=	-		
NONE					
<del>-</del>					
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 user to set as an input           PORTNUM         DIO_PIN_t         Interpretation of the pin user to set as an input           PORTNUM         DIO_PORT_t         Interpretation of the pin user to set as an input           PORTOGE PORT the port of that pin         DIO_PORT_t         Interpretation of the pin user to set as an input           PORTNUM         DIO_PORT_t         Interpretation of the pin user to set as an input         PORTNUM DIO_PORT_t           The port of that pin         PIN_DIR         DIO_PORT_t           The port of that pin         PIN_DIR         DIO_PORT_t           The port of that pin         PIN_DIR         DIO_PORT_t           The port of that pin         PIN_DIR	DIO_SET_PORT  input PORTNUM	DIO_SET_PORT

arguments	input	PIN_NUM	DIO_PIN_t
	•	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 oddriter	or timer value	
function name	TIMERCOUNTE	R STOP	
arguments	INPUT	TIMER NUM	TIMER_NUM_T
arguments	1141 01	which timer to use	TIWEIX_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				
	CAN_SEND	CAN MCC 4			
arguments	input	CAN_MSG_t	msg		
t	NONE	the msg that will be sent			
return	NONE	2.017/101			
description	CAN SEND MSC	GIVIN			
function name	CAN_RESCEVE				
arguments	NONE				
return	CAN_MSG_t				
description	can recieve msg	from another ECU			
LEFTLIGH/RIGH	HT API				
name	LIGHT_STATE_1				
type	Enumeration				
range	LIGHT_OFF	0	LIGHT OFF		
	LIGHT_ON	1	LIGHT ON		
description	enum listing light	t states			
name	_PORT_ARR				
type	Uint32 *				
description	an array hold all	the HW Port Adresses			
function name	light_Init				
arguments	input	PIN_NUM	DIO_PIN_t		
- J		the pin u want to set as an o			
		PORTNUM	DIO_PORT_t		
		the port of that pin			
return	NONE				
description	init light output p	in			
	- <u>3</u>				
function name	SET_LIGHT				
arguments	input	PIN_NUM	DIO_PIN_t		
argamente	iiiput	the pin of output	D.O_1\_(		
		PORTNUM	DIO_PORT_t		
		the port of that pin	0 0		
		lightval	LIGHT_STATE_t		
		on / off	LIGHT_CTATE_t		
return	NONE	On / On			
description	_	│ nd _PORT_ARR and  to on / c	off light		
description	using DIO API al	IN _FORT_ARR AND 10 00 / (	ni ligiti		
buzzer API					
	DUZZED OTAT	- 4			
name	BUZZER_STATE	=_t 			
type	Enumeration	_	DUZZED OFF		
range	BUZZER_ON		BUZZER OFF		
	BUZZER_OFF		BUZZER ON		
description	enum listing buz	zer states			
	DOE= :				
name	_PORT_ARR				
type	Uint32 *				
description	an array hold all	the HW Port Adresses			

function name	buzzerlnit			
arguments	input	PIN_NUM	DIO_PIN_t	
		the pin u want to set as		
		PORTNUM	DIO_PORT_t	
		the port of that pin		
eturn	None			
description	init the buzzer o	utput pin		
function name	SET_BUZZER			
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	nd _PORT_ARR and to	on / off BUZZER	
can handler API				
name	can_handler_ms	sg_s		
type	structure			
elements	comm_manger_	_msg_s	C_M_S	the msg from comm manager
	e2			optional can handler padding
description	a struct to hold o	comm_manger_msg_s a	nd can handler paddin	g
function name	CAN_HANDLEF	R_INIT		
arguments	None			
return	NONE			
description	init the comm. p	rotocol used based on co	onfig	
c 4: -	OAN !!A!!!!	OEND		
function name	CAN_HANDLEF		0.14.0	
arguments	input	comm_manger_msg_s		
roturn	NONE	the comm manger msg	y structre	
return description		andler_msg_s msg using	ı can ΔDI	
uescription	senu ine can_na	ander_msg_s msg using	J CALLACT	
function name	CAN_HANDLEF	R RCV		
arguments	NONE			
return	comm_manger_	msa s		
description	<u> </u>	n_manger_msg_s receve	ed from theCAN usina	CAN API
and the second	••			
comm manger A	PI			
name	comm_manger_	msg s		
type	structure			
elements	CAR_STATE_S	_C_S	have the door s	tate
	e2			manger padding
description	a struct to hold a	all the states and comm i		•
name	protocol_t			
type	Enumeration			
range	lis of all the prot	ocol that can be used		
description	enum listing the	the ECU comm protocol	ls	

unction name	COMM_MANAG	ER_INIT				
arguments	None					
eturn	NONE					
description	init all the comm	. protocols used based on co	nfig			
function name	COMM_MANAG	ER_send				
arguments	input	CAR_STATE_S	C_S			
		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_m	sg_s		
function name	COMM_MANAG	ER_rcv				
arguments	input	protocol_t	protocol			
		the protocol used to send	-			
return	CAR_STATE_S	,				
description		ng that comm protocol API				
арр	23.00.00					
name	car_state_t					
type	Enumeration					
range	N_C_S		) switch not press	ed door is closed	car not moving	
lango	N_C_M		switch not pressed, door is closed ,car not moving switch not pressed, door is closed ,car is moving			
	N_O_S		2 switch not presse			
	N_O_M		switch not presso			
	P_C_S		-		<del>-</del>	
	-		4 switch pressed, door is closed ,car not moving 5 switch pressed, door is closed ,car is moving			
	P_C_M		6 switch pressed, door is closed ,car is moving			
	P_O_S	7 switch pressed, door is open ,car is moving				
to a state of	P_O_M		switch pressed, o	door is open ,car i	s moving	
description	enum listing the	car sensors states				
	040 07477 -					
name	CAR_STATE_S					
type	structure					
elements	door_state_t	_D_S	have the door sta			
	motion_state_t	_M_S	have the motion			
	switch_state_t	_S_S	have the switch	- 1-1-1-		
	car_state_t	_C_S		te which will be the	e result of the th	
description	a struct to hold a	all the states and change it in	the run time			
name	STATES					
type	CAR_STATE_S					
description	that is the global	structure that will set the sta	ates in			
	_					
	_		i			
function name	buzzer_light_tas	k				
function name arguments	buzzer_light_tas NONE	k				

return	NONE					
description	depending on the	STATES SET LIGHT , BUZZ				
function name	data_RCV_task					
arguments	NONE					
periodacity	event triggerd with	h high priority				
return	NONE					
description	rcv the msg and s	et the STATES global variab	le using the can p	orotocol using COI	MM_MANAGER_I	cv
function name	CAN_RESCEVE_	ISR				
arguments	NONE					
return	flag					
description	may unsuspend s	ome data_RCV_task				