Detailed Design of UART Driver

Team X

Contents

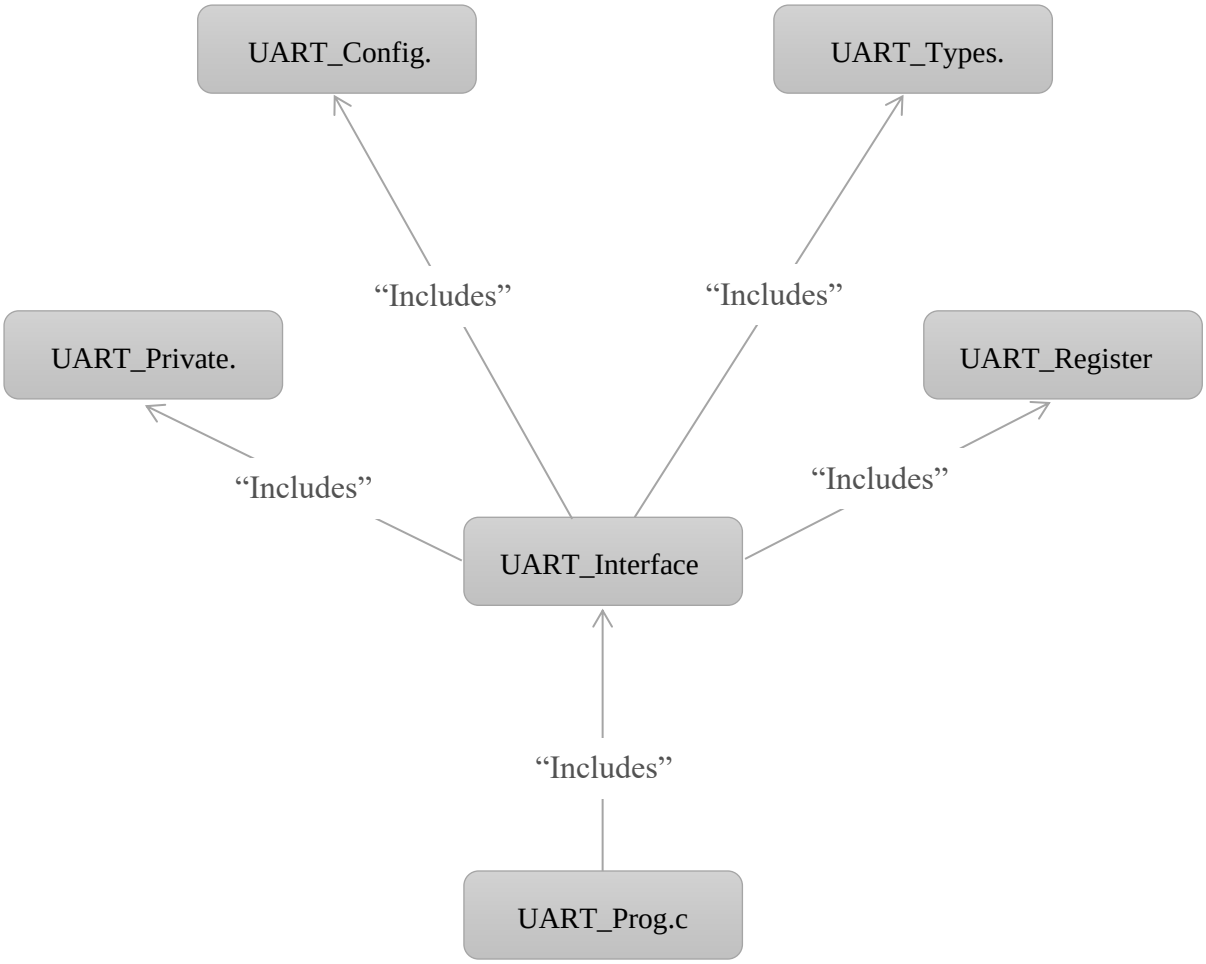
Introduction and functional overview:

This document specifies detailed design of the module UART Driver.

The UART driver initializes, sends character, number or string and Receive character, number or string.

File structure:

The UART module shall comply with the following file structure:



Requirement's traceability:

Requirement	Description	Satisfied by
[SRS_UART_3301]	The UART driver shall provide a service that that initializes the UART.	[DD_UART_3303]
[SRS_UART_3302]	The UART driver shall provide a service that transmit character or number to another MCU	[DD_UART_3304] [DD_UART_3305]
[SRS_UART_3303]	The UART driver shall provide a service that send a string to another MCU..	DD_UART_3306] [DD_UART_3307]
[SRS_UART_3304]	The UART driver shall provide a service that receive character, number or string from another MCU.	[DD_UART_3308] [DD_UART_3309]
[SRS_UART_3305]	The UART driver shall provide a service that set call back function	[DD_UART_3310]

API specification:

Type definitions:

1- [DD_UART_3301]

Name:	(*p2RXC_ISR_FUNC)
Type	static volatile void
Range:	-----
Description:	A pointer to a function that doesn't take argument sand returns void
Covered requirements:	[SRS_UART_3305]

2- [DD_UART_3302]

Name:	Mode
Type	enum
Range:	-----
Description:	Type helps me when select mode of UART these modes are send or receive.
Covered requirements:	[SRS_UART_3305]

Function definitions:

1- [DD_UART_3303]

Service name:	UART initialization
Syntax:	E_Errore_State_UART MCAL_UART_init(uint16 baud_rate)
Sync/Async:	ASynchronous
Re-entrancy:	Re-entrant
Parameters (in):	baud_rate
Parameters (out):	none
Parameters (inout):	none
Return type:	E_Errore_State_UART
Description:	Function that initializes the UART
Covered requirements:	[SRS_UART_3301]

2- [DD_UART_3304]

Service name:	UART transmit character or number.
Syntax:	E_Errore_State_UART MCAL_UART_send_sysch(uint8 Data)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	Data | data is sent by UART.
Parameters (out):	none
Parameters (inout):	none
Return type:	E_Errore_State_UART
Description:	Function that sends character or number to another MCU
Covered requirements:	[SRS_UART_3302]

3- [DD_UART_3305]

Service name:	UART send character or number
Syntax:	E_Errore_State_UART MCAL_UART_send_asysch(uint8 Data)
Sync/Async:	ASynchronous
Re-entrancy:	Re-entrant
Parameters (in):	Data | data is sent by UART.
Parameters (out):	none

Parameters (inout):	none
Return type:	E_Errore_State_UART
Description:	Function that sends character or number to another MCU
Covered requirements:	[SRS_UART_3302]

4- [DD_UART_3306]

Service name:	UART send string
Syntax:	E_Errore_State_UART MCAL_UART_send_str_sysch(char*Str)
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	*Str … String is sent by UART
Return type:	E_Errore_State_UART
Description:	Function that sends string to another MCU
Covered requirements:	[SRS_UART_3303]

5- [DD_UART_3307]

Service name:	UART send string
Syntax:	E_Errore_State_UART MCAL_UART_send_str_asysch(char*Str)
Sync/Async:	ASynchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	*Str … String is sent by UART
Return type:	E_Errore_State_UART
Description:	Function that sends string to another MCU
Covered requirements:	[SRS_UART_3303]

6- [DD_UART_3308]

Service name:	UART receive data
Syntax:	uint8 MCAL_UART_receive_sysch()
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	Function return uint8 | This is data received from another MCU.
Return type:	uint8.
Description:	Function that receives data from another MCU.
Covered requirements:	[SRS_UART_3304]

7- [DD_UART_3309]

Service name:	UART receive data
Syntax:	uint8 MCAL_UART_receive_asysch()
Sync/Async:	ASynchronous
Re-entrancy:	Re-entrant
Parameters (in):	none
Parameters (out):	none
Parameters (inout):	none
Return type:	Function return uint8 | This is data received from another MCU
Description:	Function that receives data from another MCU.
Covered requirements:	[SRS_UART_3304]

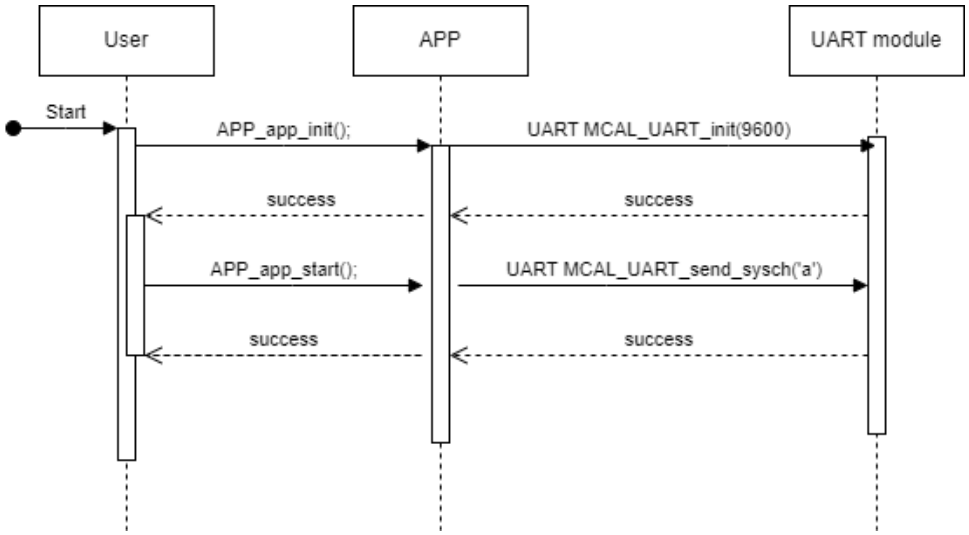
8- [DD_UART_33010]

Service name:	LCD integer to string
Syntax:	E_Errore_State_UART MCAL_UART_setCAllBACK(void (*p2f)(void))
Sync/Async:	Synchronous
Re-entrancy:	Re-entrant
Parameters (in):	void (*p2f)(void) | pointer to function
Parameters (out):	none
Parameters (inout):	none

Return type:	E_Errore_State_UART
Description:	Function that takes address of the function and sends this function to ISR
Covered requirements:	[SRS_UART_3305]

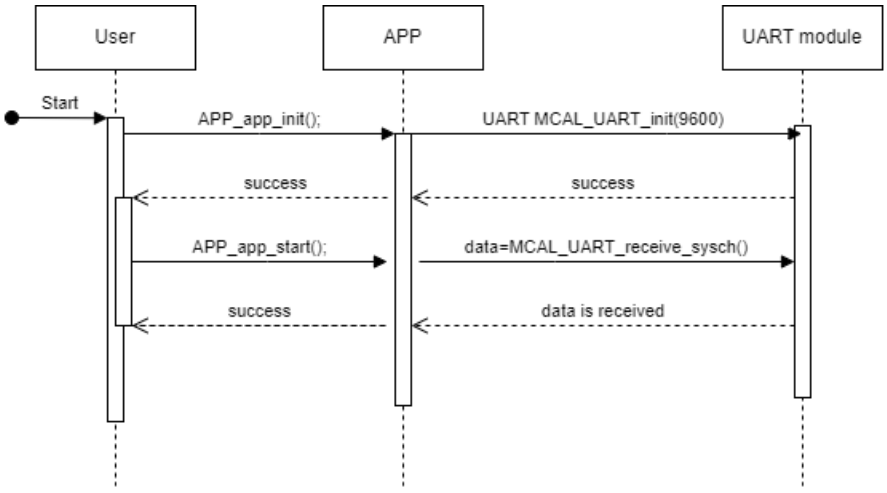
Sequence Diagram:

UART sends character a by synchronous way:



User wants app to initialize when app initialize the UART initialize. User wants the app to starts when the app starts the UART sends character a by synchronous way.

Uart receive character ‘a’ by synchronous way:



User wants app to initialize when app initialize the UART initialize. User wants the app to starts when the app starts the UART receives character a by synchronous way.