

Application Note

UART Echo

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1. Preface

This application note describes the sample software of UART_Echo using Universal Asynchronous Receiver Transmitter (UART). This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
BSP	Board Support Package
UART	Universal Asynchronous Receiver Transmitter
T32A	32bit Timer Event Counter

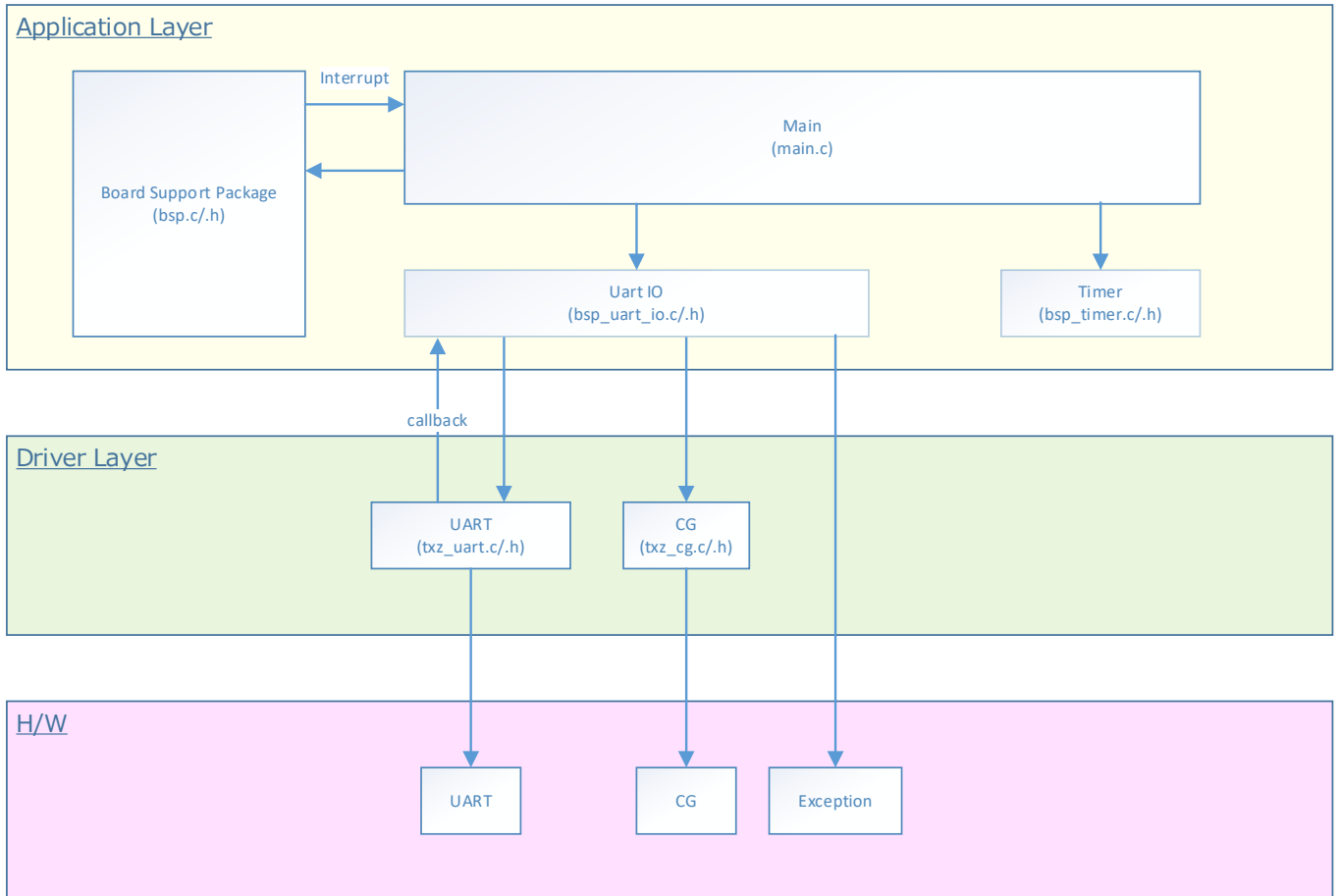
3. Reference Document

Document	Notes
Data sheet	Refer to the data sheet of MCU to be used.
Reference manual	Refer to the reference manual of each IP to be used.
Application note MCU User Guide	Refer to the MCU user manual to be used.

4. Target Sample Program

Sample Program	Outlines
UART_Echo	Sample of UART function

5. Configuration Diagram



6. Sample Program: UART_Echo

This sample software does echo-back output of data input from the terminal emulator using UART function.

6.1. Outlines of Operation

Data input from the terminal emulator is echoed back.

6.2. Function to Use

The functions to use are as follows.

For the Port assignment of each channel, refer to the MCU user manual.

IP	Channel	Objective
UART	BSP_UART_0	Communication with the terminal emulator

6.3. Interrupt to Use

Interrupt	Outlines
UART Interrupt	UART reception interrupt
	UART transmission interrupt
	UART ERROR interrupt

6.4. Configuration

Nothing.

6.5. Example of Terminal Emulator Output

6.5.1. Normal Operation

Initial display

```
Input =
```

Display when inputting character

```
Input = 123456
```

Echo back output display

```
Input = 123456  
Echo = 123456
```

6.5.2. Case of Error Occurrence

```
Input = 01234567890123456789012345678901  
Input Error !!
```

7. UART Driver

7.1. List of Drivers

The UARTUART_Echo is controlled by using the following drivers.
For an example of use, refer to the source code.

Interface Name	Control Outlines
uart_deinit	UART object is released.
uart_disable_half_clock	Half clock mode is disabled.
uart_disable_loopback	Loopback is disabled.
uart_disable_wakeup	Wakeup is disabled.
uart_discard_receive	Reception is discarded.
uart_discard_transmit	Transmission is discarded.
uart_enable_half_clock	Half clock mode is enabled.
uart_enable_loopback	Loopback is enabled.
uart_enable_wakeup	Wakeup is enabled.
uart_get_boudrate_setting	Baud rate setting is acquired.
uart_get_error	Error information is acquired.
uart_get_status	Status is acquired.
uart_init	UART object is initialized.
uart_mdma_deinit	UART MDMA object is released.
uart_mdma_discard_receive	Reception is discarded.
uart_mdma_discard_transmit	Transmission is discarded.
uart_mdma_get_uart_ch_to_mdma_ch	From UART channel to MDMA channel
uart_mdma_init	UART MDMA object is initialized.
uart_mdma_receiveIt	Data is received. Non-blocking communication.
uart_mdma_transmitIt	Data is transmitted. Non-blocking communication.
uart_receiveIt	Data is received. Non-blocking communication.
uart_send_break	Break is transmitted.
uart_stop_break	Break is stopped.
uart_transmitIt	Data is transmitted. Non-blocking communication.

8. Revision History

Revision	Date	Description
1.0	2021-11-04	First release

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