

Application Note

Flash Userboot

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1. Preface

This application note describes the sample software of Flash_Userboot using Flash memory function. This document helps the user check operation of a product under development and develop its program.

2. Technical Term

Term/Abbreviation	Definition
UART	Universal Asynchronous Receiver Transmitter
T32A	32-bit Timer Event Counter
LED	Light-emitting diode

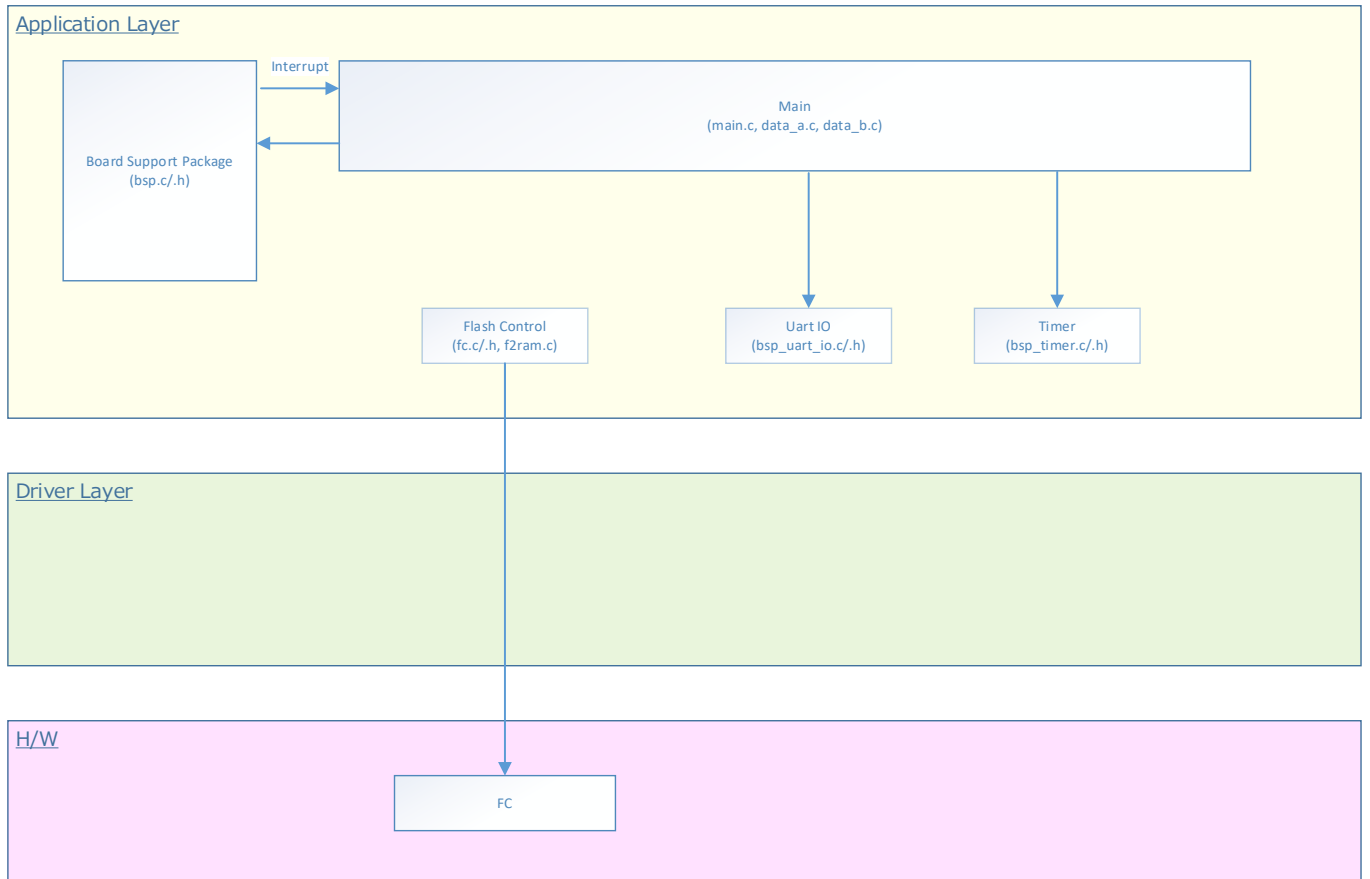
3. Reference Document

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
Flash_Userboot	Sample of Flash Userboot

5. Configuration Diagram



6. Sample Program: Flash_Userboot

This sample software programs data A and data B alternately to a special region of Flash memory using Flash memory function.

6.1. Outlines of Operation

Data table A and B with different display contents are placed in the Flash memory.

After reset, the main program starts up and output the display pattern in the data table (data A).

BSP_LED_0 and BSP_LED_2 flashes case of data A.

When BSP_PSW_3 is pushed down, the data A and B are transferred to the RAM.

The areas of the data A and B in the Flash memory are erased.

The data B in the RAM is programmed to Flash memory of data A, and The data A in the RAM is programmed to Flash memory of data B.

By output the display pattern in the data table (data B) from main program, you can confirm that the Flash memory have been rewritten.

BSP_LED_1 and BSP_LED_3 flashes case of data B.

If BSP_PSW_3 is pushed down again, the same operation is done, and rewrite alternately the data A and the data B.

The status of the main program is displayed on the terminal emulator.

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
T32A	BSP_TIMER_1MS	Interval timer
PORT	BSP_PSW_3	Switch input
	BSP_LED_0	LED control
	BSP_LED_1	LED control
	BSP_LED_2	LED control
	BSP_LED_3	LED control
FLASH	-	Code/Data flash control

6.3. Interrupt to Use

Interrupt	Outlines
UART Interrupt	UART reception interrupt
	UART transmission interrupt
	UART ERROR interrupt
Timer Interrupt	Interval timer interrupt

6.4. Configuration

Nothing.

6.5. Example of Terminal Emulator Output

6.5.1. Normal Operation

Case of executing data A

Execute Data A

Case of executing data B

Execute Data B

Waiting switch input

Please press the SW

Case of expanding RAM

RAM transferring

Case of erasing

Erasing

Case of writing

Rewriting

Case of writing is completed

Finished

6.5.2. Case of Error Occurrence

Nothing.

7. Revision History

Revision	Date	Description
1.0	2021-10-26	First release

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