

# Application Note

## CRC (CRC-A)

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### 1. Preface

This application note describes the sample software for Cyclic Redundancy Check (CRC).  
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
CG	Clock Control and Operation Mode
CRC	Cyclic Redundancy Check
UART	Universal Asynchronous Receiver Transmitter

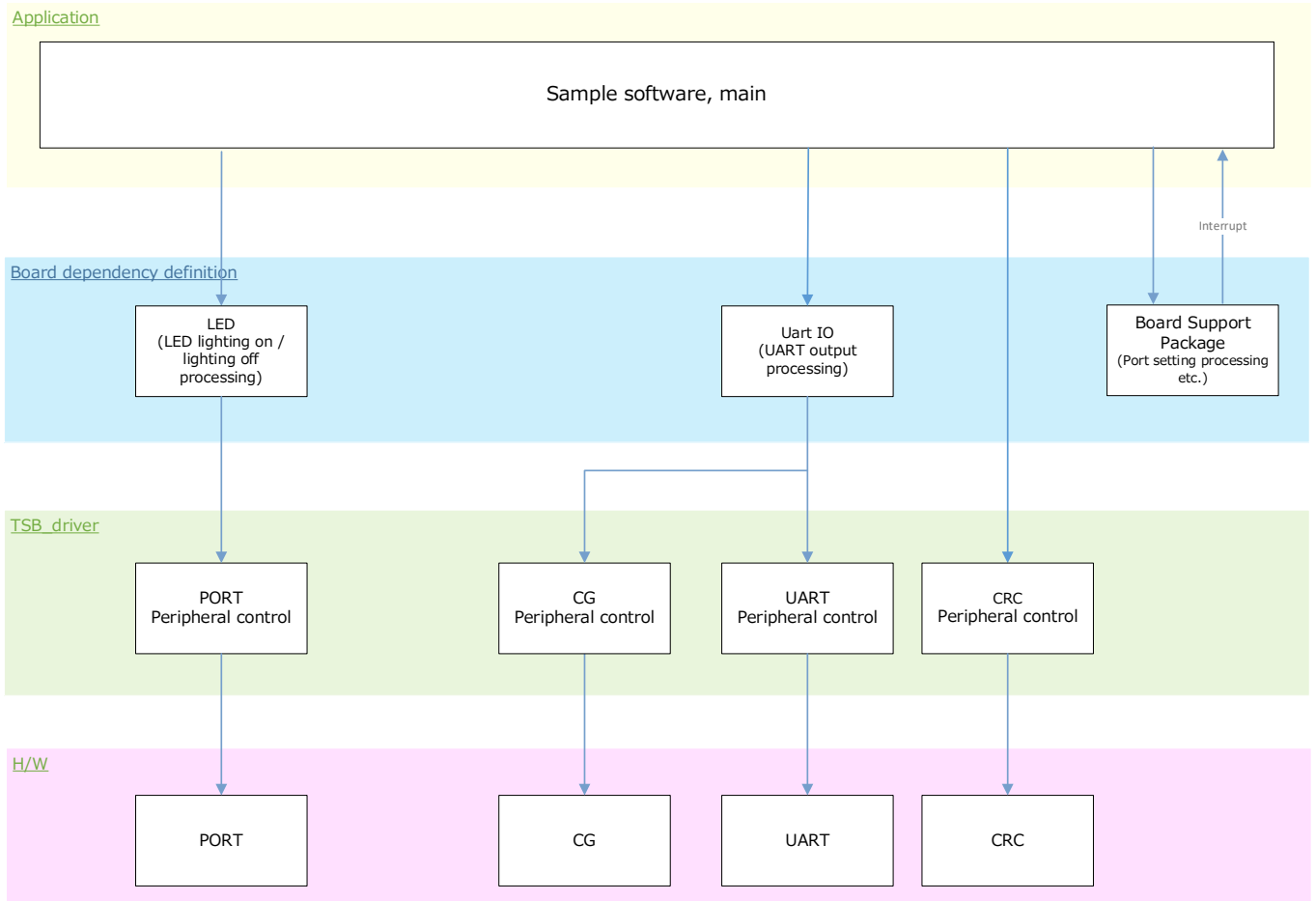
### 3. Reference Document

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 guide to be used.

## 4. Target Sample Program

Sample Program	Outline
CRC	Sample program of CRC calculation function

## 5. Configuration Diagram



## 6. Sample Program: CRC

Using the calculation function of the CRC function, CRC calculation is performed for the data in the specified memory range, and the result is displayed by turning the LED on and off.

This sample software that outputs the specified memory range and CRC calculation results to the terminal emulator.

### 6.1. Outlines of Operation

CRC calculation is performed by continuous input for the data in the specified memory range.

Check the CRC calculation result, and if the result is normal, turn on BSP\_LED\_1.

In case of abnormality, BSP\_LED\_2 lights up.

### 6.2. Function to Use

The functions to use are as follows:

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

IP	Channel	Objective
UART	BSP_UART_1	Communication with the terminal emulator
PORT	BSP_LED_1	For operation check
	BSP_LED_2	For operation check

### 6.3. Interrupt to Use

Interrupt	Outlines
INTUART0RX	UART ch0 Receive interrupt for terminal emulator
INTUART0TX	UART ch0 Transmission interrupt for terminal emulator
INTUART0ERR	UART ch0 Error interrupt for terminal emulator

### 6.4. Configuration

“main.c” configuration setting.

Configuration	Current Value	Description
MEMORY_TOP	CRC_MEMORY	MEMORY_TOP changes by switching between CRC_MEMORY and CRC_RAM
MEMORY_SIZE	9	Memory size (Unit: byte)
CRC data format	CRC16	Switching CRC16 and CRC32

## 6.5. Example of Terminal Emulator Output

### 6.5.1. Normal Operation

Outputs the CRC calculation result.

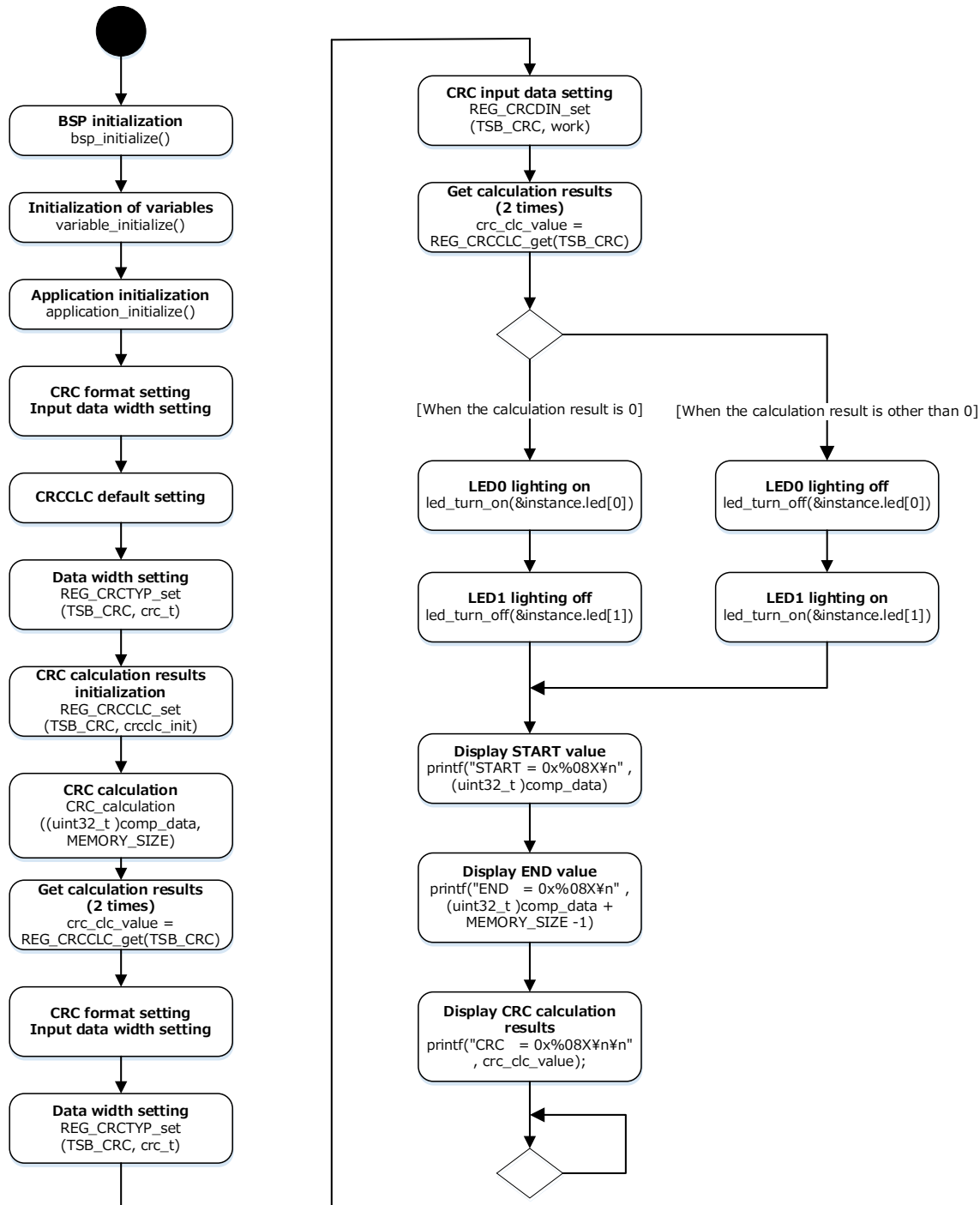
```
START = 0x00000E03  
END   = 0x00000E0B  
CRC   = 0x000029B1
```

### 6.5.2. Case of Error Occurrence

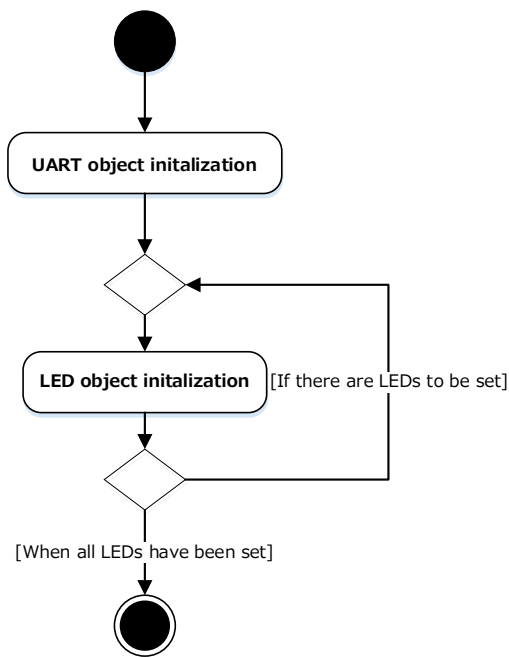
Nothing.

## 7. Activity diagram

### 7.1. main

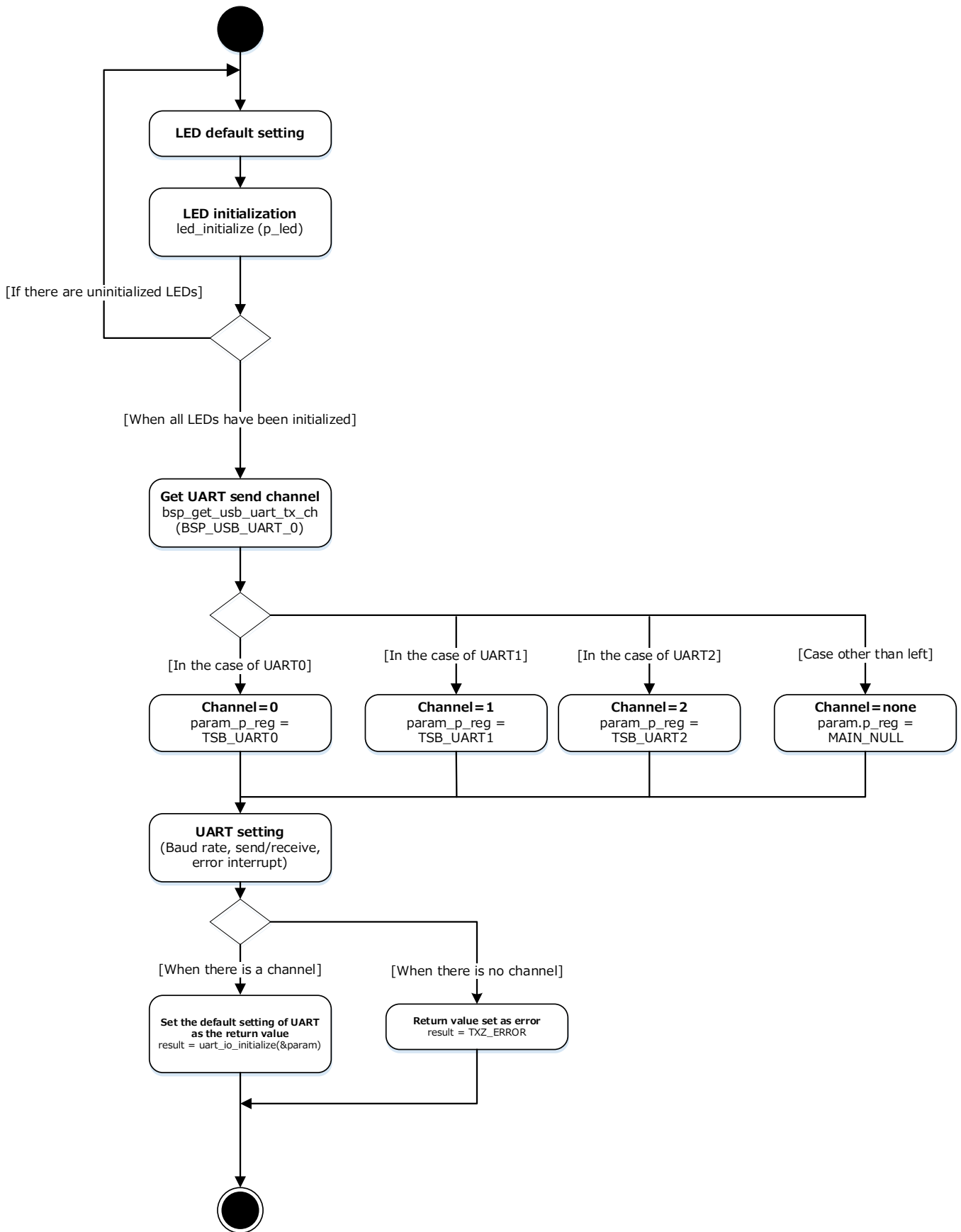


## 7.2. variable\_initialize

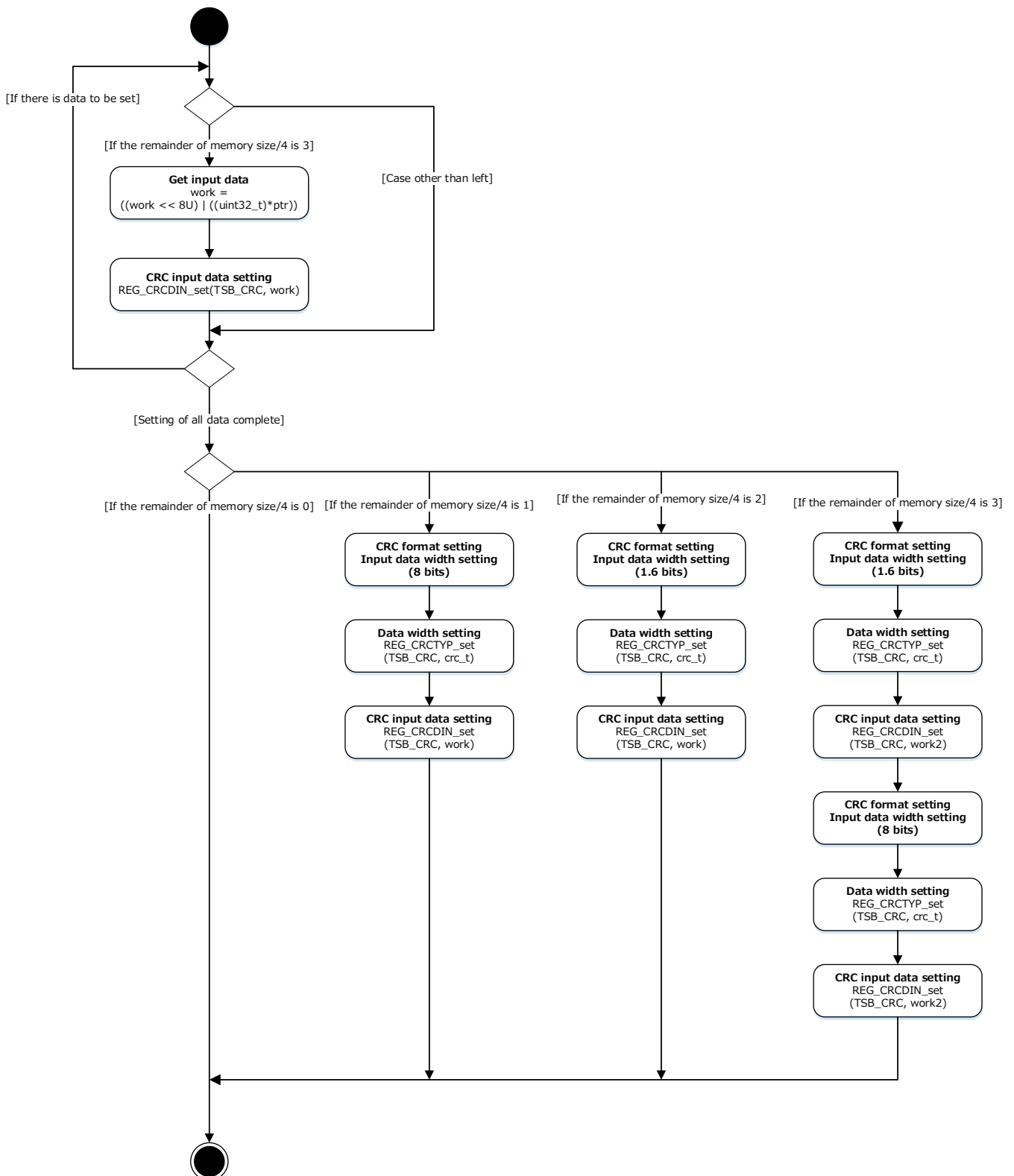




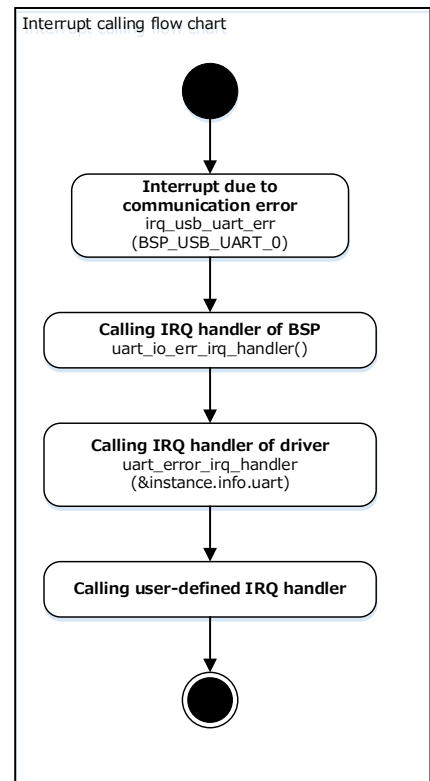
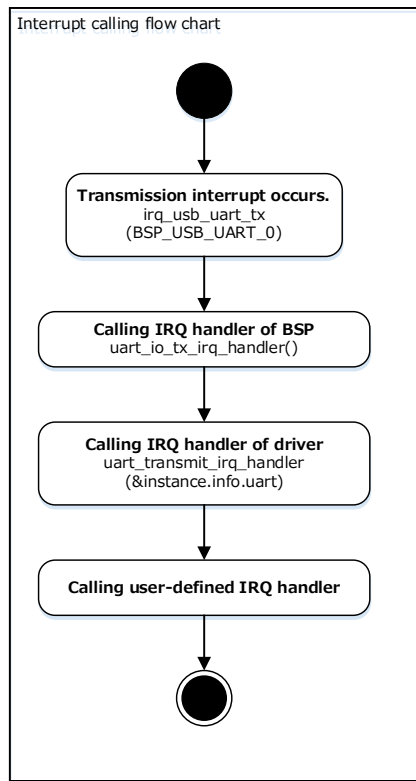
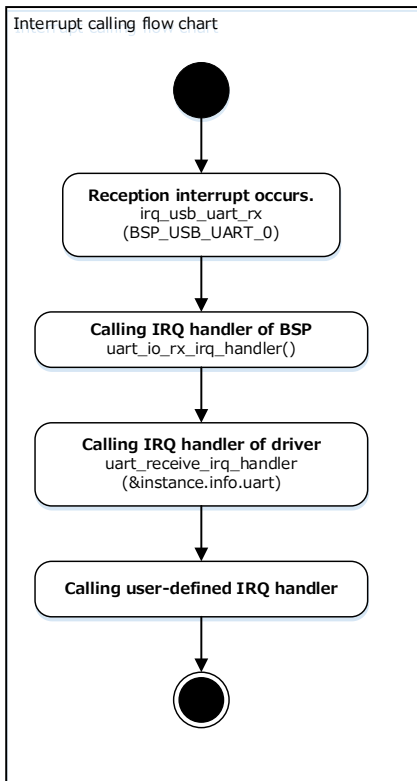
### 7.3. application\_initialize



### 7.4. CRC\_calculation



## 7.5. Interrupt



## 8. Revision History

Revision	Date	Description
1.0	2023-10-16	First release

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