Function Keys

Example Code Introduction for 32-bit NuMicro® Family

Information

Application	Perform the function key demo includes short pressed event, interval event and long pressed event
BSP Version	M480 Series BSP CMSIS v3.04.000
Hardware	NuMaker-PFM-M487 v3.0

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1 Function Description

1.1 Introduction

This example code shows how to declare a function key which can identify short press event, interval event and long press event.

1.2 Principle

This example uses a GPIO interrupt to identify the status of key is pressed or released and a 1KHz timer to record the time interval between the pressed and released. And the short event, interval event and long press event can be identified according timer interval between pressed and released and status of key.

1.3 Demo Result

```
shortHandler
intervalHandler
intervalHandler
intervalHandler
intervalHandler
intervalHandler
intervalHandler
longHandler
```

2 Code Description

(1) Hook the initialize function and time tick function

(2) Setup the parameter of short period, interval period and interval delay

(3) Hook the callback function of short press event, interval event and long press event
Initialize the function key

(4) Call the function key handler in the main loop

```
/* SW2 function & parameter & callback function */
sw2.init = sw2_init;
sw2.getTick = sw2_getTick;

sw2.shortPeriod = 500;      // ms
sw2.intervalPeriod = 250;   // ms
sw2.intervalDelay = 1000;   // ms

sw2.shortHandler = sw2_shortHandler;
sw2.intervalHandler = sw2_intervalHandler;
sw2.longHandler = sw2_longHandler;

functionKey_init(&sw2);

while(1) {
    /* SW2 handler */
    functionKey_Handler(&sw2);
}
```

(1) Update the status of key when GPIO interrupt occurred.
(2) Clear the GPIO interrupt

```
void GPG_IRQHandler(void)
{
    /* To check if PG.15 interrupt occurred */
    if(GPIO_GET_INT_FLAG(PG, BIT15)) {
        GPIO_CLR_INT_FLAG(PG, BIT15);

        /* Record the key status */
        if (PG15 == 1) {
            functionKey_chgStatus(&sw2, RELEASED);
        } else {
            functionKey_chgStatus(&sw2, PRESSED);
        }

    } else {
        /* Un-expected interrupt. Just clear all PC interrupts */
        PG->INTSRC = PG->INTSRC;
        printf("Un-expected interrupts.\n");
    }
}
```

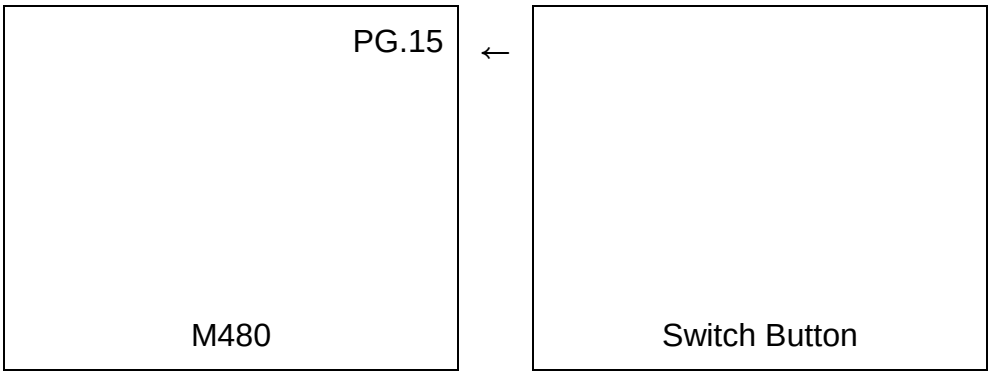
3 Hardware and Software environment

Software Environment

- BSP version
  - M480 Series BSP CMSIS V3.04.000
- IDE version
  - Keil uVersion 5.26

Hardware Environment

- Circuit components
  - NuMaker-PFM-M487
- Diagram



4 Directory Information

- EC_M480_FunctionKeys_V1.00
  - Library — Sample code header and source files
    - CMSIS — Cortex® Microcontroller Software Interface Standard (CMSIS) by Arm® Corp.
    - Device — CMSIS compliant device header file
    - StdDriver — All peripheral driver header and source files
  - SamlpeCode
    - ExampleCode — Source file of example code

5 How to execute a sample code

1. Browsing into sample code folder by Directory Information (section 4) and double click M480_FunctionKeys.uvproj.
2. Enter Keil compile mode
   a. Build
   b. Download
   c. Start/Stop debug session
3. Enter debug mode
   a. Run

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