

STM32F103ZET6使用CubeMX移植freertos

原创

Chenxi Zhang

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目录

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- 配置流程
 - 1. 时钟配置
 - 使能相关外设
 - 使能freertos
 - 配置freertos
 - 杂七杂八的项目配置下，generate code生成代码
 - 在任务接口里完善函数定义，上板运行，okk

介绍

本文基于 野火 霸道开发板，记录使用CubeMX移植freertos 流程

配置流程

1. 时钟配置

Pinout & Configuration

Clock Configuration

Software Packs

Pinout

Categories

A->Z

System Core

- DMA
- GPIO
- IWDG
- NVIC
- ☒ RCC
- ☒ SYS
- WWDG

Analog

- ADC1
- ADC2
- ADC3
- DAC

Timers

Connectivity

RCC Mode and Configuration

Mode

High Speed Clock (HSE)

Crystal/Ceramic Resonator

Low Speed Clock (LSE)

Crystal/Ceramic Resonator

☐ Master Clock Output

Configuration

Reset Configuration

☒ Parameter Settings

☒ User Constants

☒ NVIC Settings

☒ GPIO Settings

CSDN @徐翀

freertos的默认时基为systick，这里HAL的Timebase就不能再使用Systick了，改为TIM1

使能USART1，方便打印输出

CategoriesA-Z

✓ SYS

WWDG

Analog

ADC1

ADC2

ADC3

DAC

Timers

Connectivity

CAN

FSMC

I2C1

I2C2

SDIO

SPI1

SPI2

SPI3

UART4

UART5

✓ USART1

USART2

USART3

USB

USART1 Mode and Configuration

Mode

ModeAsynchronous

Hardware Flow Control (RS232)Disable

Configuration

Reset Configuration

Parameter SettingsUser ConstantsNVIC SettingsDMA SettingsGPIO Settings

NVIC Interrupt Table	Enabled	Preemption Priority	Sub Priority
DMA1 channel4 global interrupt	✓	5	0
DMA1 channel5 global interrupt	✓	5	0
	✓	5	0

USART5:
Universal Asynchronous Receiver/Transmitter
[details and documentation \(Ctrl+d\)...](#)

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使能控制LED的PB0/1/5

CategoriesA-Z

System Core

DMA

GPIO

IWDG

NVIC

✓ RCC

✓ SYS

WWDG

Analog

ADC1

ADC2

ADC3

DAC

Timers

Connectivity

GPIO Mode and Configuration

Configuration

Group By Peripherals

GPIOADCRCCSYSUSART

Search Signals

Search (Ctrl+F)

☐ Show only Modified Pins

Pin Name	Signal on Pin	GPIO output	GPIO mode	GPIO Pull-up...	Maximum ou...	User Label	Modified
PB0	n/a	Low	Output Push ...	Pull-up	Low	LED_G	✓
PB1	n/a	Low	Output Push ...	Pull-up	Low	LED_B	✓
PB5	n/a	Low	Output Push ...	Pull-up	Low	LED_R	✓

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使能freertos



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关注

Pinout & Configuration

Clock Configuration

Software Packs

Pinout

Categories A-Z

SDIO

SPI1

SPI2

SPI3

UART4

UART5

USART1

USART2

USART3

USB

Multimedia

Computing

Middleware and Software Packs

AIROC-Wi-Fi-Bluetooth-STM32

FATFS

FP-SNS-MOTENV1

FP-SNS-MOTENVWB1

FP-SNS-SMARTAG2

FREERTOS

I-CUBE-Cesium

I-CUBE-ITTIADB

I-CUBE-embOS

I-CUBE-wolfSSL

I-Cube-SoM-uGOAL

USB_DEVICE

X-CUBE-ALGOBUILD

X-CUBE-ALS

X-CUBE-BLE1

X-CUBE-BLE2

X-CUBE-BLEMGR

X-CUBE-EEPRMA1

X-CUBE-GNSS1

X-CUBE-ISPU

X-CUBE-MEMS1

X-CUBE-NFC4

X-CUBE-NEC6

FREERTOS Mode and Configuration

Mode

Interface CMSIS_V2

搜索 AI提问 评论 笔记

Configuration

Reset Configuration

Timers and Semaphores

Mutexes

Events

FreeRTOS Heap Usage

Config parameters

Include parameters

Advanced settings

User Constants

Tasks and Queues

Configure the below parameters :

Search (Ctrl+F)

API

FreeRTOS API

CMSIS v2

Versions

FreeRTOS version

10.0.1

CMSIS-RTOS version

2.00

Kernel settings

USE_PREEMPTION

Enabled

CPU_CLOCK_HZ

SystemCoreClock

TICK_RATE_HZ

1000

MAX_PRIORITIES

56

MINIMAL_STACK_SIZE

128 Words

MAX_TASK_NAME_LEN

16

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配置freertos

设置堆大小, STM32F103ZET6, RAM 64KBytes, 这里设置一半32k

Computing

Middleware and Software Packs

AIROC-Wi-Fi-Bluetooth-STM32

FATFS

FP-SNS-MOTENV1

FP-SNS-MOTENVWB1

FP-SNS-SMARTAG2

FREERTOS

I-CUBE-Cesium

I-CUBE-ITTIADB

I-CUBE-embOS

I-CUBE-wolfSSL

I-Cube-SoM-uGOAL

USB_DEVICE

X-CUBE-ALGOBUILD

X-CUBE-ALS

X-CUBE-BLE1

X-CUBE-BLE2

Configuration

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FreeRTOS Heap Usage

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Tasks and Queues

Configure the below parameters :

Search (Ctrl+F)

USE_TICKLESS_IDLE

Disabled

USE_TASK_NOTIFICATIONS

Enabled

RECORD_STACK_HIGH_ADDRESS

Disabled

Memory management settings

Memory Allocation

Dynamic / Static

TOTAL_HEAP_SIZE

32768

Memory Management scheme

heap_4

Hook function related definitions

USE_IDLE_HOOK

Disabled

TOTAL_HEAP_SIZE

TOTAL_HEAP_SIZE must be between 512 Bytes and 64 KBytes.

Diagnostics:

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配置低功耗模式, 使能任务时间统计



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关注

The screenshot displays the STM32CubeMX configuration window for the FreeRTOS mode. The left sidebar shows the 'System Core' and 'Middleware and Software Packs' sections. The 'FreeRTOS' pack is selected. The main area shows the 'Configuration' tab with various settings. Key settings highlighted with red boxes and annotations include:

- USE TICKLESS_IDLE**: Set to 'Built in functionality enabled'. An annotation '低功耗模式' (Low power mode) is next to it.
- GENERATE RUN TIME STATS**: Set to 'Enabled'. An annotation '任务时间统计' (Task time statistics) is next to it.
- USE_STATS_FORMATTING_FUNCTIONS**: Set to 'Enabled'.

Other visible settings include:

- QUEUE_REGISTRY_SIZE**: 8
- USE_APPLICATION_TASK_TAG**: Disabled
- ENABLE_BACKWARD_COMPATIBILITY**: Enabled
- USE_PORT_OPTIMISED_TASK_SELECTION**: Disabled
- USE_TASK_NOTIFICATIONS**: Enabled
- RECORD_STACK_HIGH_ADDRESS**: Disabled
- Memory management settings**:
 - Memory Allocation: Dynamic / Static
 - TOTAL_HEAP_SIZE: 32768 Bytes
 - Memory Management scheme: heap_4
- Hook function related definitions**:
 - USE_IDLE_HOOK: Disabled
 - USE_TICK_HOOK: Disabled
 - USE_MALLOC_FAILED_HOOK: Disabled
 - USE_DAEMON_TASK_STARTUP_HOOK: Disabled
 - CHECK_FOR_STACK_OVERFLOW: Disabled
- Run time and task stats gathering related definitions**:
 - USE_TRACE_FACILITY: Enabled
- Co-routine related definitions**:
 - USE_CO_ROUTINES: Disabled

使能一些debug函数

The screenshot shows the 'Advanced settings' tab in the FreeRTOS configuration tool. A list of configuration options is displayed, with 'xSemaphoreGetMutexHolder' highlighted in blue and its value set to 'Enabled'. A red rectangle is drawn around this row. Below the configuration tool, a text box provides a description of the 'xSemaphoreGetMutexHolder' parameter, stating it is a macro used to exclude components of the real-time kernel not utilized by the application. It explains that setting it to 1 (Enabled) includes the API function, while setting it to 0 (Disabled) excludes it.

创建两个task

Tasks and Queues

Timers and Semaphores

Mutexes

Events

FreeRTOS Heap Usage

Config parameters

Include parameters

Advanced settings

User Constants

Tasks

Task Name	Priority	Stack Size...	Entry Function	Code Generati...	Parameter	Allocation	Buffer Name	Control Block ...
defaultTask	osPriorityNormal	128	StartDefaultTa...	Default	NULL	Dynamic	NULL	NULL
ledTask	osPriorityAboveN...	128	StartLedTask	Default	NULL	Dynamic	NULL	NULL
uartTask	osPriorityAboveN...	512	StartUartTask	Default	NULL	Dynamic	NULL	NULL

AddDelete

Queues

Queue Name	Queue Size	Item Size	Allocation	Buffer Name	Control Block Name
------------	------------	-----------	------------	-------------	--------------------

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杂七杂八的项目配置下，generate code生成代码

HomeSTM32F103ZETxdemo.ioc - Project ManagerGENERATE CODE

Pinout & Configuration

Clock Configuration

Project Manager

Tools

Project

Code Generator

Advanced Settings

Project Settings

Project Name

demo

Project Location

E:\gitee\stm32\STM32F103ZET6

Browse

Application Structure

Advanced

Do not generate the main()

Toolchain Folder Location

E:\gitee\stm32\STM32F103ZET6\demo\

Toolchain / IDE

MDK-ARM

Min Version

V5.32

Generate Under Root

Linker Settings

Minimum Heap Size

0x200

Minimum Stack Size

0x400

Thread-safe Settings

Cortex-M3NS

Enable multi-threaded support

Thread-safe Locking Strategy

Default - Mapping suitable strategy depending on RTOS selection.

Mcu and Firmware Package

Mcu Reference

STM32F103ZETx

Firmware Package Name and Version

STM32Cube_FW_F1 V1.8.5

Use latest available version

Use Default Firmware Location

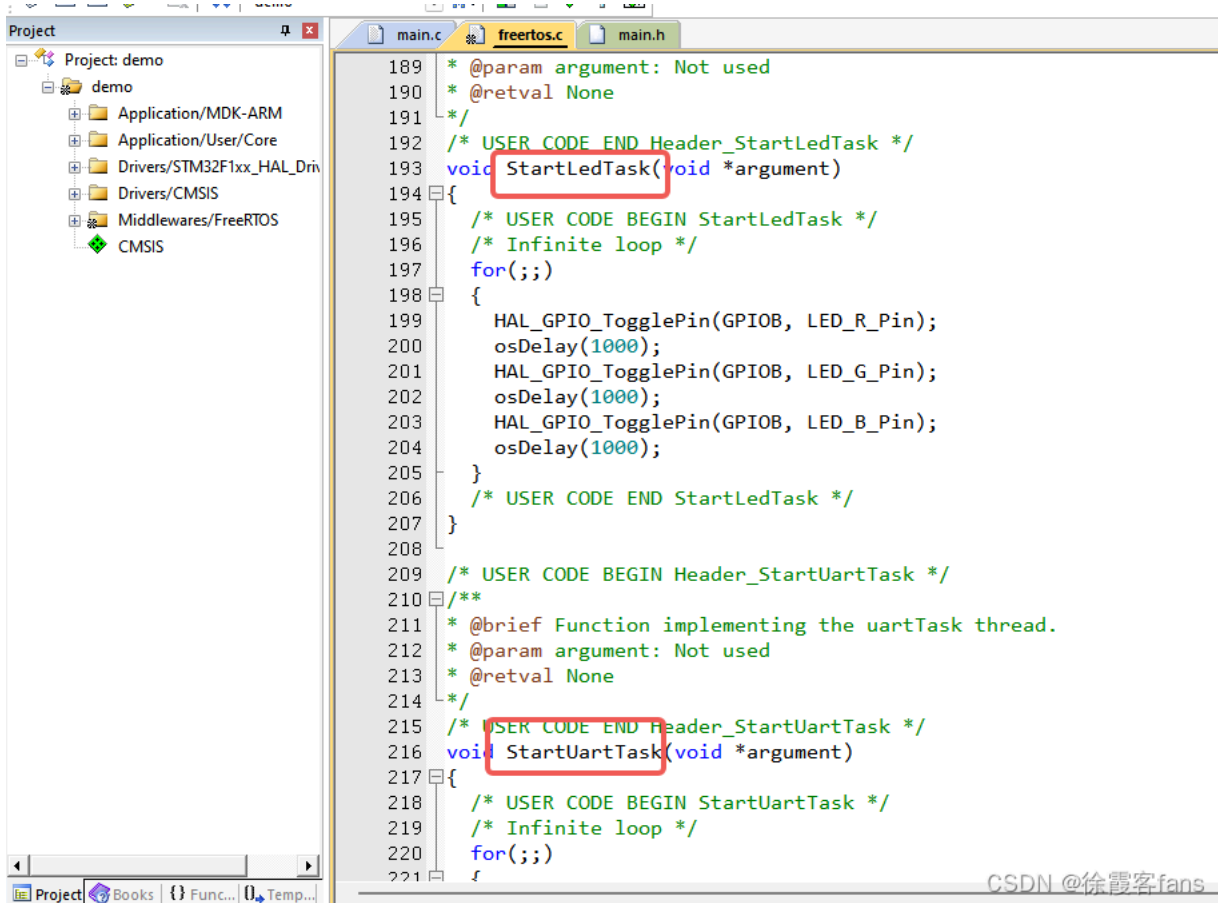
CSD

在任务接口里完善函数定义，上板运行，okk



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关注



STM32F103ZET6【HAL库开发】STM32CUBEMX-----2.GPIO输入、按键外部中断
使用STM32F1.3ZET6的HAL库开发方式，通过外部中断的方式来实现按键控制LED

wsq_666的时

基于STM32CubeMX+STM32F103ZET6配置工程
【代码】基于STM32CubeMX+STM32F103ZET6配置工程。

zcx_5517的时

1 条评论  CSDN-Ada助手 热评 恭喜您撰写了第20篇博客！标题中提到您使用CubeMX移植freertos，这对于学习STM32F103ZET6来说是非常有价值...

基于stm32f103ze的freertos学习——cubemx配置与测试(1)

前言:freertos其实就是个多线程的任务管理器(大概是这样) Freertos配置 首先打开cubemx 要先配置一下基本时钟源,这里原本默认的是滴答定时器,给它修改成定时器 设置:

Free RTOS 简单移植 STM32F103ZET6_怎么一直freertos到f103zet6上面-CS...

Free RTOS 简单移植 STM32F103ZET6 Free RTOS 学习 第一章 简单的移植 耶稣的话,说:“施比受更为有福。”学了2年的单片机了,懵懵懂懂,学RTOS我一直在找一个快速

基于cubemx的STM32F103ZET6的freertos实现多任务流水灯

jacklood的时

使用freertos多任务系统实现正点原子STM32F103ZET6开发板的流水灯点亮控制。(1) SYS设置,注意选择定时器源为TIM1-TIM8的任一个,因为滴答定时器被多任务系

STM32F407ZET6 + CubeMX学习笔记1——时钟配置与GPIO输入输出

Kaf_Rim_Isekai的时

时钟树配置: HSI高速内部时钟, 使用内部RC振荡时钟, 精度低, 一般用HSE, 根据板子上晶振(若存在多晶振则看离芯片最近的)标注频率填入。其余模式多为IO复用

Stm32CubeMx freertos 基本运用_freeos

摘要由CSDN通过智能技术生成 一、选择芯片类型并配置时钟 当前选择是stm32f103zet6,配置RCC、SYS,配置时钟树为72M。使用freertos时推荐采用硬件定时器作为时钟

一、STM32cubeMX配置FreeRTOS工程_stm32cubemx freertos

一、使用 cubeMX 配置 FreeRTOS 二、CMSIS 接口 总结 前言 一、使用cubeMX配置 FreeRTOS 选择stm32 芯片。选择外部晶振作为高速时钟。进行系统配置。这里要

STM32F103ZET6【HAL开发】STM32CUBEMX-----3.3测量PWM的频率和占空比

wsq_666的时

使用定时器测量PWM频率和占空比

STM32F103ZET6移植FreeRTOS

在STM32F103ZET6上移植FreeRTOS, 涉及到多个关键步骤和知识点: 1. **环境搭建**: 首先, 你需要安装STM32CubeMX, 这是一个配置工具, 用于生成MCU初始化代

hal库:STM32CubeMX配置与使用(含Free RTOS)_stm32 hal库 想重新配置...

本文详细介绍了如何使用STM32CubeMX配置HAL库,包括基础配置和需求配置,如定

2、基于STM32CubeMX的FreeRTOS移植——第二章【FreeRTOS系统移



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关注