RT-Thread 学习笔记 -- finsh shell 配置方法 严文年-2018-01-07 记于苏州

一、背景:

【finsh 同时支持: c-style 模式 与 msh 模式, 但是默认进入 c-style 模式,执行[msh()]即可切换到 msh 模式。在 msh 模式下执行[exit]后 即退回到 c-style模式】----->由于 RT-Thread BSP 默认配置 Finsh 仅 为 msh 模式, 想要同时拥有 c-style 模式 和 msh 模式, 需要按照如下 方法进行配置。

二、配置环境:

- ◆ 系统: Windows 7 旗舰版 (64 位)
- \Leftrightarrow ENV: env_released_0.6.4
- \diamond RT-Thread: rt-thread-3.0.2
- ♦ IDE: Keil 5.24
- ◆ 下载器: J-Link V9.3
- ◆ 目标芯片: STM32F103RCT6

三、参考文档:编程指南第11章

finsh是RT-Thread的命令行外壳(shell),提供一套供用户在命令行的操作接口,主要用于调试或查看系统信息。finsh支持两种模式:

1. C语言解释器模式,为行文方便称之为c-style;

2. 传统命令行模式,此模式又称为msh(module shell)。

C语言表达式解释模式下,finsh能够解析执行大部分C语言的表达式,并使用类似C语言 的函数调用方式访问系统中的函数及全局变量,此外它也能够通过命令行方式创建变量。

在msh模式下, finsh运行方式类似于dos/bash等传统shell。

在本章的最后一节宏选项中介绍如何配置finsh,读者可以根据自己的喜好配置finsh。

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	11.1 简介
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	11.3 什么是shell?
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11.10 宏选项

finsh有一些宏定义可以简单配置。

#define RT_USING_FINSH

此宏定义在rtconfig.h中,用于在RT-Thread中打开finsh,并将其作为shell。

#define FINSH_USING_SYMTAB
#define FINSH_USING_DESCRIPTION

此宏定义在rtconfig.h中。打开FINSH_USING_SYMTAB可以在finsh中使用符号表,打开FINSH_USING_DESCRIPTION 需要给每个finsh的符号添加一段字符串描述。这两个宏一般都需要打开。

#define FINSH_USING_HISTORY

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11.10节 宏选项

RT-Thread编程指南

此宏定义在rtconfig.h中,打开后可以在finsh中使用方向键(上下)回溯历史指令。

#define FINSH_USING_MSH

此宏定义在rtconfig.h中, 打开后finsh将支持传统shell模式。

#define FINSH_USING_MSH_ONLY

此宏定义在rtconfig.h中,打开后finsh仅支持msh模式。

如果打开了FINSH_USING_MSH而没有打开FINSH_USING_MSH_ONLY, finsh同时支持两种cstyle模式与msh模式,但是默认进入c-style模式,执行msh()即可切换到msh模式,在msh 模式下执行 exit后即退回到c-style模式。

#define DFS_USING_WORKDIR

此宏定义在rtconfig.h中,它实际上是DFS组件的宏,但由于它与finsh有一定关系,因 此在这里也介绍一下。打开此宏后finsh可以支持工作目录。当使用msh时,建议打开此宏。

#define FINSH_USING_AUTH

此宏定义在rtconfig.h中,打开则开启权限验证功能。系统在启动后,只有权限验证 (目前仅支持密码验证)通过,才会开启finsh功能,提升系统输入的安全性。

#define FINSH_DEFAULT_PASSWORD "rtthread"

此宏定义在rtconfig.h中,设置finsh在密码验证模式下的默认密码。密码长度大于等 于FINSH_PASSWORD_MIN(默认6),小于等于FINSH_PASSWORD_MAX(默认RT_NAME_MAX)。

四、配置步骤:

1. 打开 ENV 工具: (根据自己电脑系统选择要打开的可执行文件:

console_xx.exe)

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2. 切换到 BSP 待配置工程目录: (命令: cd [待配置工程目录])为 方便目录切换, 可将 ENV 与 RT-Thread 放置到相同根目录。



3. 打开配置界面: (命令: menuconfig)



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RT-Thread Configuration
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RT-Thread Kernel> RT-Thread Components>
RT-Thread online packages> Device type (STM32F103RC)>
[] Using HSI as clock source
(8000000) HSE Value [*] Using uart1
[] Using uart2
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4. 进入 finsh 配置目录:

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RT-Thread Configuration Arrow keys navigate the menu. <enter> selects submenus> (or empty submenus). Highlighted letters are hotkeys. Pressing <y> includes, <n> excludes, <m> modularizes features. Press <esc><esc> to exit, <? > for Help, for Search. Legend: [*] built-in []</esc></esc></m></n></y></enter>
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<pre><select> < Exit > < Help > < Save > < Load ></select></pre>
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5. 配置 Finsh: (取消仅为 msh 模式)



6. 保存配置:



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7. 退出 ENV 配置: (连续按键盘 ESC 按键)



五、更新工程:

1. 将重新配置的参数更新到工程文档: (命令: scons --target=mdk5)



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CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_l1_fsmc.o
CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_l1_gpio.o
CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_ll_i2c.o
CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_ll_pwr.o
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CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_l1_rtc.o
CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_l1_sdmmc.o
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CC build\Libraries\STM32F1xx_HAL_Driver\Src\stm32f1xx_11_usart.o
CC build/Libraries/STM32F1xx_HAL_Driver/Src/stm32f1xx_11_usb.o
LINK rtthread-stm32.axf arm-none-eabi-objcopy -0 binary rtthread-stm32.axf rtthread.bin
scons: done building targets.
C:\Users\Administrator\Desktop\0_0\RT_Thread\rt-thread-3.0.2\bsp\stm32f10x-HAL> -
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六、验证:

1. 打开更新后的项目工程文档



2. 确认配置信息是否更新

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Applications	63	
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🕀 🧰 DeviceDrivers	69 #define FINSH_THREAD_STACK_SIZE 4	10.86
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	76 /* Device virtual file system */	
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	80 /* Device Drivers */	
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3. 配置 Keil 相关设置





4. 编译工程

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.\build\rtthread-stm3	2.axf" - 0 Error(s), 0 Warning(s).	
Build Time Elapsed: 0	0:01:12	
-	W	•
D	J-LINK / J-TRACE Co	orte
		1000 C

- 5. 使用 J-Link 或其他 Tools Download 编译成功的 Hex 文件到目 标板卡。
- 6. 打开串口调试工具,验证 finsh shell 功能是否配置成功。
- A. 通过键盘【TAB】输出 msh Commands list,通过指令【exit】
 退出 msh 模式,进入 c-style 模式。

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File Edit Connection View Window Help				
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<pre>\ / - RT - Thread Operating System / \ 3.0.2 build Jan 7 2018 2006 - 2017 Copyright by rt-thread team</pre>				
msh >				
R1-Inread shell commands:version- show RT-Thread version in:list_thread- list threadlist_sem- list semaphore in systemlist_event- list event in systemlist_mutex- list mutex in systemlist_mailbox- list mail box in systemlist_mailbox- list memory heap in systemlist_memheap- list memory heap in systemlist_timer- list timer in systemlist_device- list device in systemexit- return to RT-Thread shellhelp- List threads in the systemtime- Execute command with timefree- Show the memory usage in the	formation tem m mode. m. the syste	n =m.		
msh >exit finsh > finsh > COM5 / 115200 8-N-1 Connected 01:15:29	● TX ● RX	e RTS	OTR	DCD RI

B. 通过键盘【TAB】输出 c-style Commands list, 通过指令【msh()】

退出 c-style 模式,进入 msh 模式。

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<pre>list_device list device in system list list all symbol in sys msh use module shell variable: dummy dummy variable for fir finsh >msh()</pre>	stem			
.0, 0x00000000 msh > msh > COM5 / 115200 8-N-1 Connected 01:17:17	● TX ● RX	RTSCTS	OTR DSR	DCD RI

后记:

关于 finsh shell 的具体使用方法及技巧,可查阅 RT-Thread 官方提供的编程手册 或 搜索 RT-Thread 学习笔记的相关章节。