FreeRTOS 8.0.0 porting on STM32F429I Discovery Board on Linux

1 Introduction

FreeRTOS 8.0.0 porting on 32F429IDISCOVERY board using GCC on linux.

Building the projects requires an arm-none-eabi- toolchain with Cortex-M4F support. The known working toolchains are:

- Sourcery CodeBench
- GNU Tools for ARM Embedded Processors

2 Get FreeRTOS and STM32F429 Discovery Firmware Ready

Download and decompress the FreeRTOS V8.0.0 from sourceforge.

```
unzip FreeRTOSV8.0.0.zip
```

Download and decompress the STM32F429 discovery firmware package from STMicroelectronics website.

```
unzip stsw-stm32138.zip
```

Clone and build the project.

```
git clone https://github.com/winfred-lu/stm32f429-freertos800
cd stm32f429-freertos800
make
```

stlink is required to flash the binary to the STM32F429I Discovery board. With stlink in the $PATH, then

```
make flash
```

3 Supported Projects

Multiple projects are supported:

1. A loop to toggle LEDs (without OS)
2. ```
   make clean
   make led-test
   ```
3. No task will be created. An infinite loop to toggle LEDs that never breaks. Try this if there is a hardware issue or so.
4. Simple LED flasher example (default)
5. ```
   make clean
   ```

make simple-led

6. The LED flash tasks are created. Two of the tasks will toggle the STM32F429I Discovery board LED3 and LED4 in different frequency.
7. Comprehensive test/demo application
8. make clean
   make complex-led

9. A lot of additional tasks and a software timer are crated. Please reference comments in main-led.c.
10. LCD test/demo application
11. make clean
    make lcd

12. In addition to standard demo tasks, the following tasks are created:
    - LCD task : a gatekeeper task that receives messages from the queue and writes the messages to the LCD.
    - Check hook : periodically checks that all the demo tasks are still operational, and sends PASS or ERROR messages to the LCD task.

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