STM32 FreeRTOS laboratory 2

April 29, 2026

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1. **Implement a blocking-mode serial input task** that allows the user to dynamically adjust the blinking period of an LED via the serial console.
2. **Design an interrupt service routine (ISR)** to capture incoming serial characters, using semaphore signaling to notify relevant tasks.
3. **Create a task to process and print received characters** by reading them from the queue populated by the ISR.
4. **Configure a hardware timer to generate interrupts** upon timeout. Use a semaphore to signal and unblock a task waiting for the timer event.

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5. **Enable an ADC channel for sampling.** Configure the ADC to acquire samples at a specified frequency and use DMA to transfer data efficiently. Handle the corresponding interrupt by safely deferring the data processing to a high-priority task, which copies the samples into a local array.
6. **Transmit the acquired samples via the serial interface.** Display the data using an external program for visualization or analysis.