### 1. What is the purpose of the timerCallback() function?

Purpose: The timerCallback() function is called by the timer driver whenever the timer reaches the specified period. Its main purpose is to drive the state machines (SOS\_Tick and OK\_Tick) that control the Morse code blinking of the LEDs. Each time the callback is triggered, it checks whether the TOGGLED flag is set and either runs the "SOS" or "OK" state machine, depending on the button press.

### 2. What does period mean in this context?

Explanation: In this context, the period represents the time interval between consecutive executions of the timerCallback() function. It is measured in microseconds (µs) because the params.periodUnits is set to Timer\_PERIOD\_US. The period determines how frequently the timer fires and calls the callback function, effectively controlling the speed of the state machine's transitions. For example, if the period is set to 500,000 µs (500 ms), the timerCallback() function will be called every 500 ms.

### 3. How does the Timer\_CONTINUOUS\_CALLBACK parameter impact the driver?

Impact: The Timer\_CONTINUOUS\_CALLBACK parameter configures the timer to run continuously, meaning that after each period elapses, the timer automatically resets and triggers the callback function again without stopping. This ensures that the state machine continues to execute indefinitely as long as the program is running. In this lab, it allows the LED blinking pattern to repeat continuously at regular intervals.

### 4. What is gpioButtonFxn0() used for?

Purpose: The gpioButtonFxn0() function is the interrupt service routine (ISR) that is executed when the user presses a button (connected to CONFIG\_GPIO\_BUTTON\_0). It toggles the TOGGLED flag, which determines whether the Morse code state machine will send "SOS" or "OK". The button press effectively switches between the two different Morse code messages.

### 5. What is the purpose of GPIO\_CFG\_IN\_INT\_FALLING?

Purpose: The GPIO\_CFG\_IN\_INT\_FALLING configuration sets up the button GPIO pin to trigger an interrupt when it detects a falling edge signal. A falling edge occurs when the signal changes from high (logic 1) to low (logic 0), which typically happens when a button is pressed (assuming the button is wired to pull the signal low when pressed). This configuration is essential for detecting button presses and triggering the corresponding interrupt service routine (gpioButtonFxn0() in this case).