## Technical Article What Is Compute through Power Loss?



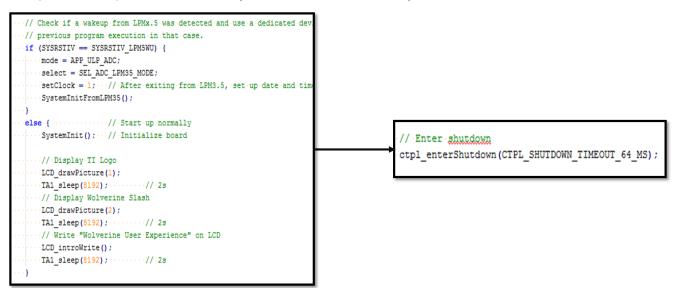
## William Cooper

With the Launch of new MSP430 FRAM MCUS and the latest MSP430 FRAM LaunchPad, you may have missed our recently launchedMSP-FRAM-UTILITIES page. The truth is, this is likely the most exciting release in terms of both innovation and usability since our power-profilingEnergyTrace Technology that released nearly one year ago. Given the mix of MSP430FRx FRAM microcontrollers released this past year, we thought it would be fitting to start a library that could leverage some of the unique memory advantages offered across this family of microcontrollers:

- · Unified memory block for use as program or data storage
- 10e15 write endurance
- · Faster write speeds
- Lower energy consumption
- Increased security

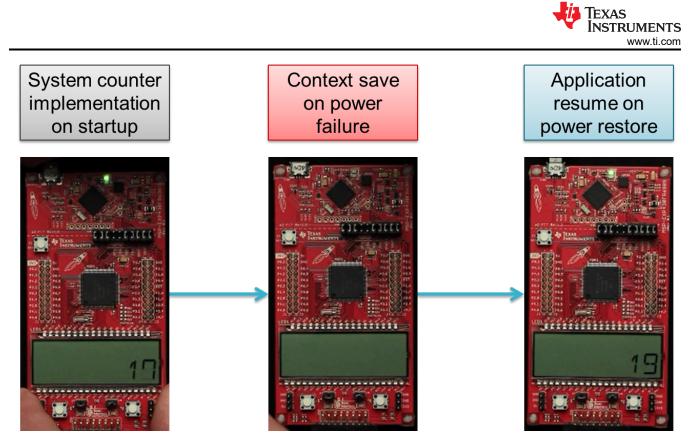
Compute Through Power Loss (CTPL) is a software utility that enables a system to save the CPU and several peripheral states in non-volatile memory before entering a low-power mode or losing power. This library features a number of APIs to monitor for events such as power-failure and to react to those events in an intelligent way. This is only possible on FRAM microcontrollers which are capable of writing at 8MHz with zero wait-states. This ultra-fast non-volatile write speed combines with 10e15 endurance to enable exciting capabilities. Since our memory protection unit is used to ensure safe operation, this is currently available exclusively on MSP430FR5x/6x microcontrollers. Let's look at the new possibilities:

1. The expanded use of low-power modes (LPMs) x.5 - reduces complexity and time associated with starting up from a low-power mode where system state is not traditionally retained.



Intelligent system state restoration after power failure - shuts down gracefully on power failure and reduces current consumption and timeon wake-up.

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This new software library can be leveraged across applications! Explore the TI Design (TIDM-FRAM-CTPL) to learn more and get started with this utility API and the MSP-EXP430FR6989 LaunchPad!

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