For my final project, I propose to develop an emergency help alert system using the MSP430 Experimenter Board. This project is inspired by the need for a discrete signaling mechanism that can be used in situations where immediate assistance is required. This system will incorporate UART communication, a buzzer, and LED Morse code functionality to create a compact and effective alert system.

Functionality: The primary function of this system is to enable a user to send a help signal through simple, non-obtrusive actions. When the keyword “help” is entered via UART, the system will activate an audible buzzer alert to signal for assistance. Additionally, pressing SW1 will cause the LED to blink the word “HELP” in Morse code, providing a visual signal even in environments where sound may not be appropriate or feasible.

Technical Specifications and Components:

Peripherals:

- **UART Communication**: Used to receive the keyword “help” from the user and trigger the alert system.
- **Timers**: Integrated to manage Morse code timing for the LED, ensuring precise signaling.
- **Port I/O and Interrupts**: SW1 activation will trigger an interrupt, initiating the Morse code sequence for the LED.

External Components:

1. **LED**: Used to display Morse code, blinking the letters of “HELP” when SW1 is pressed.
2. **Buzzer**: Provides an audible alert when “help” is received via UART, drawing immediate attention.
3. **Switch**: SW1 allows manual triggering of the Morse code signaling for silent, visual assistance.

Real-World Application: This project addresses a practical need for emergency signaling. The concept is based on creating a covert help alert system for scenarios such as domestic emergencies, where direct calls for help may not be safe or possible. Each component has a clear role: the LED and buzzer provide both visual and auditory signals, while UART facilitates a hands-free communication option.