

EMBEDDED LAB PROJECT (ENDSEMESTER)

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Project Title: Morse Code Generator using PSoC

Introduction:

The Morse Code Generator using PSoC is a project aimed at demonstrating the integration of hardware and software to generate Morse code signals using a PSoC (Programmable System-on-Chip) device. Morse code, a method of transmitting text information using sequences of dots and dashes, is widely recognized for its simplicity and effectiveness, making it a good candidate for this project.

Objective:

The objective of this project is to design and implement a system that can convert text input into Morse code signals and generate corresponding output using an LED or a buzzer controlled by a PSoC device.

Hardware Requirements:

- PSoC Development Board
- LED (In-built)
- Buzzer (Optional)

Software Requirements:

- PSoC Creator IDE
- Programming tool for uploading firmware to the PSoC device

Project Implementation:

1. Hardware Setup:

- Configure the output component (LED) to one of the pins on the PSoC development board.

2. Software Development:

- Use PSoC Creator IDE to create a new project.
- Design the hardware configuration by adding GPIO components for output control.
- Write firmware to control GPIO pins based on Morse code patterns.
- Implement Morse code translation functionality to convert text input into Morse code sequences.
- Utilize timers or delays to control the timing of dots, dashes, and gaps in Morse code signals.

3. Morse Code Generation Algorithm:

- Develop a Morse code generation algorithm in the firmware to translate text characters into Morse code signals.
- Implement logic to output dots, dashes, and gaps according to Morse code standards.
- Ensure proper timing and spacing between elements and letters in Morse code sequences.

4. Testing:

- Test the Morse code generator with various input strings to verify correct translation and timing.

Conclusion:

The Morse Code Generator using PSoC mini-project demonstrates the integration of hardware and software to create a practical embedded system capable of generating Morse code signals.