

LED Driver

Software Requirement Specification Document

1. Introduction

The purpose of this document is to specify the requirements for a software driver for controlling LEDs on microcontrollers. The driver shall provide a simple and easy-to-use interface for controlling LEDs, including functions for initializing LEDs, turning LEDs on and off, and blinking LEDs.

2. System Overview

The LED driver shall provide the following features:

- The ability to initialize digital pins as inputs or outputs
- The ability to read the state of digital input pins or port
- The ability to write the state of digital output pins or port
- The ability to set and clear digital pins or ports on an interrupt basis

3. Specific Requirements

3.1 General Behaviour

3.1.1 Background

The DIO Driver abstracts the access to the microcontroller's hardware pins. Furthermore, it allows the grouping of those pins.

3.2 Requirements

the LED shall define functions allowing:

- Init

- Turn on
- Turn off
- Toggle

-based read and write access to the internal general purpose I/O ports.

3.3 Technical requirements

1. the driver shall be compatible with all microcontrollers.
2. The LED driver shall not buffer data when providing on, off, toggle services.
3. The LED driver shall provide synchronous on/off/toggle services.

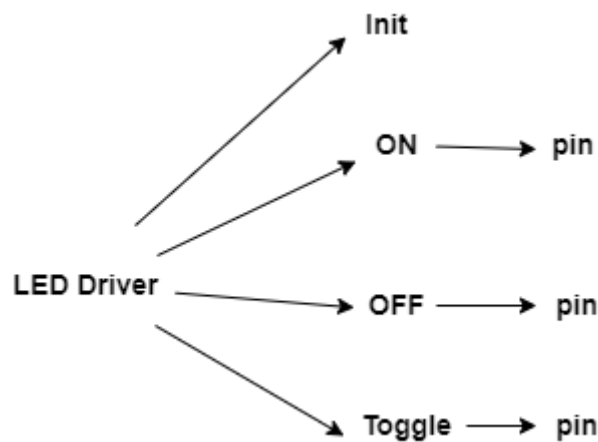


Figure 1: LED Services

3.4 non-technical requirements

- The driver shall be easy to use and understand.
- The driver shall be well-documented.
- The driver shall be efficient and use minimal resources.
- The driver shall be reliable and robust
- The driver should be open source and freely available to use.

- The driver should be actively maintained and supported by the community.
- The driver should be well-tested and documented.
- The driver should be compatible with a variety of development tools and environments.

4.File Structure

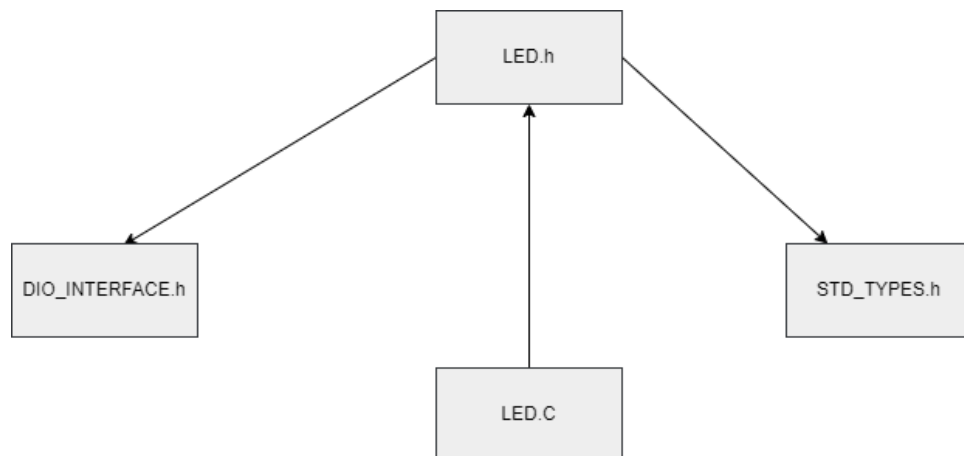


Figure 2: Include File Structure

5. Acceptance Criteria

The LED driver shall be accepted when it meets the following criteria:

- The driver shall compile and run without errors on all AVR microcontrollers.
- The driver shall pass all unit tests.
- The driver shall pass all integration tests.
- The driver shall pass all system tests.

6.State Machine

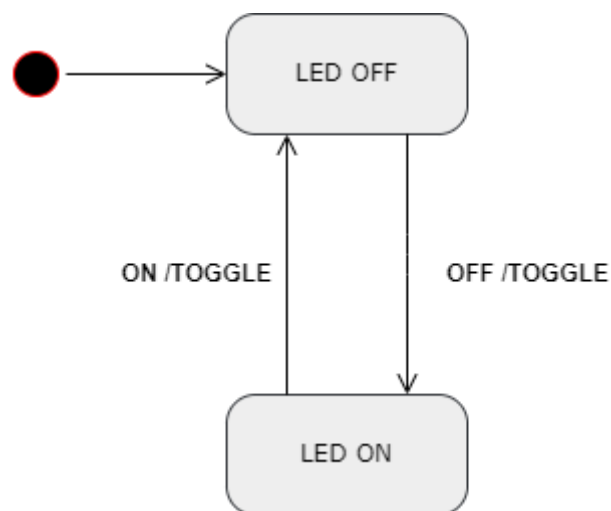


Figure 3: State Machine Diagram

7. Sequence diagrams

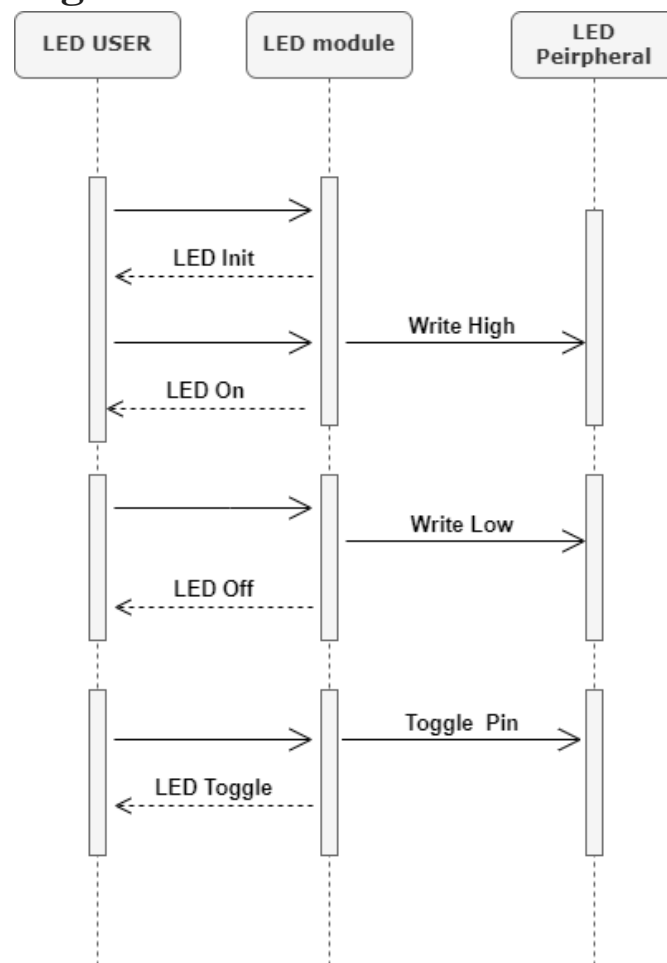


Figure 4: Sequence Digram

8.References

[AVR Microcontroller Datasheets](#)