University of California, Riverside

Lab 1 Report

Schematic Drawings and Software Installation

EE 128 Section 21

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Introduction

The objective of this lab is to develop an understanding using Cadence-Design CIS to create electronic schematics. This includes installing Cadence Capture CIS and associated libraries, creating a basic circuit schematic with common electronic components, and constructing a microcontroller-based schematic with LEDs and switches.

Experiment System Specification

Part one of this lab involved installing Cadence Capture CIS and the libraries required to check if the software is working correctly. Part two of this lab focused on creating a basic schematic that included a 555 timer, resistors, capacitors, and a DC voltage source, which helped develop skills in placing, rotating, and wiring components. Part two of this lab required designing a more complex schematic using the MK64FN1M0VLL12 microcontroller, DIP switches, resistors, and LED arrays. Two versions of the schematic were created, one following the standard configuration and another, a modified version that connected LEDs to Port C (PTC0–5, 7–8) while excluding PTC6.
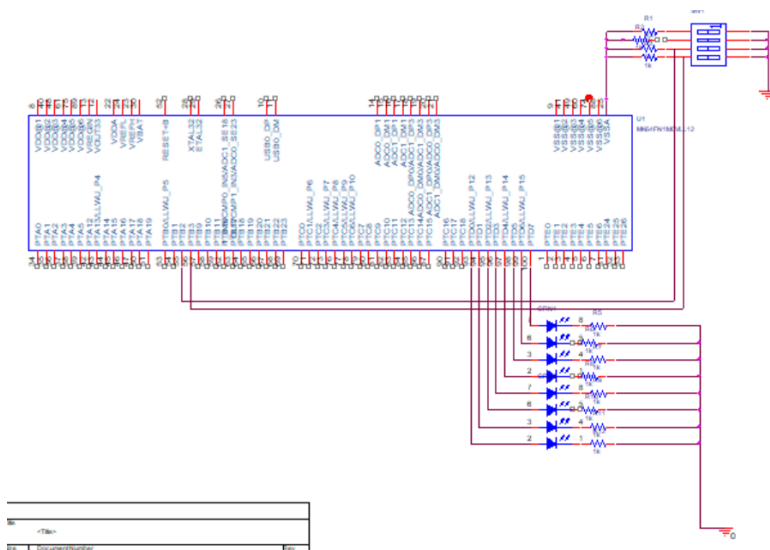
Part 1

This schematic included:

- 555 timer (555alt)
- Resistors (R)
- Capacitors (C)
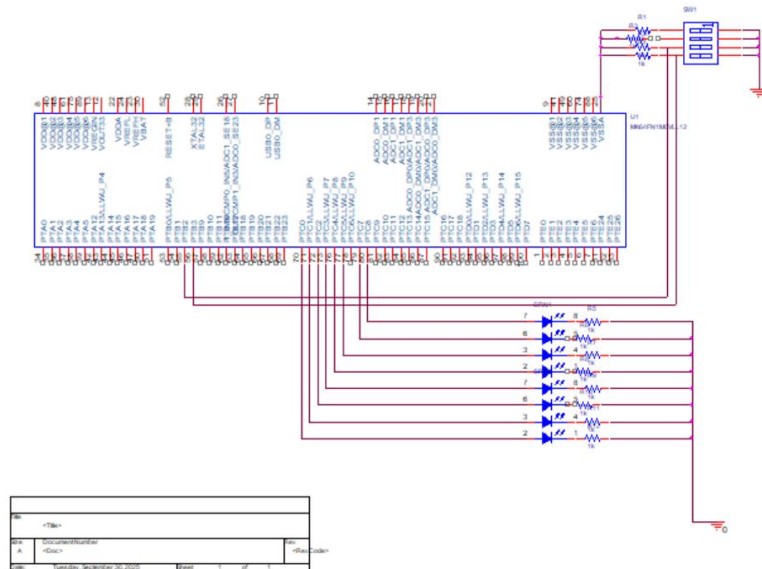- DC voltage source (VDC)
- Ground and power (VCC, GND)
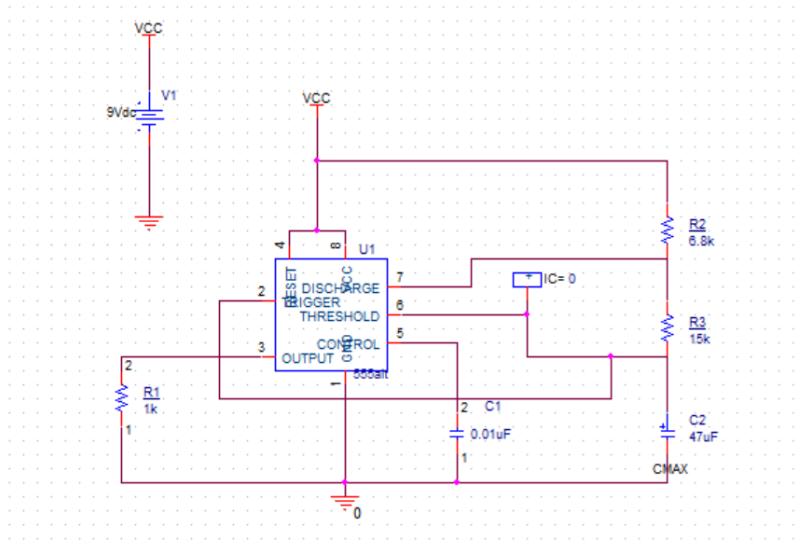
Part 2-A

This schematic included:

- MK64FN1M0VLL12 microcontroller
- DIP switch (SW_DIP_4)
- Two 4-bit LED bars (LEDARR_IS_4)
- Resistors (R)
- Ground (GND)

Part 2-B

This version moved the LED connections to Port C (PTC0–5, 7–8), excluding PTC6.

Technical Problems Encountered and Solutions

During the lab, we initially had trouble opening Cadence Capture CIS on both my device and my lab partner's device. The software would not launch properly even after several attempts. To solve this issue, we restarted our computers, and the software opened successfully, and we were able to proceed with the schematic design without further problems.

Conclusion

In the laboratory, we were able to gain experience in using Cadence Capture CIS for schematic design. We were able to install the software and create multiple circuit schematics. We successfully created both a basic 555 timer circuit and a microcontroller-based schematic with LEDs and switches. Overall, this lab helped us build the foundational skills necessary for future circuit design and projects.