

**15-348: Embedded Systems  
Fall 2022**

**Lab 6: Interfacing an EEPROM**

Due: Beginning of lab time on Thursday, September 15, 2022

## Introduction

This hardware lab consists of building a circuit to hookup an EEPROM to the 6502 microprocessor.

Your final circuit will be evaluated based on both its functionality and the cleanness of the circuit layout and wiring.

## Reading Code from an EEPROM

In order to build this circuit, please watch the following video and follow it as closely as possible. Keep in mind that this circuit will push your wiring capabilities to its limit. Also keep in mind that the address pins on the AT28C256 EEPROM are distributed over its 28 bits and not connected in sequence.

<https://www.youtube.com/watch?v=y18vPW5hydQ> (Up until timestamp 20:30)

## What to Demo

During your demonstration, we expect you to show us your computer running the same program that the video ends with (writing 42 to address 0x6000) with the Arduino showing the reads and writes.

## Software

You will need a few pieces of software while completing this lab:

- **Software to View a Binary File.** On Mac and Linux systems, `hexdump` works just fine. On Windows, Neo Hex Editor (<https://www.hhdsoftware.com/free-hex-editor>) is a good choice.
- **EEPROM Writer.** On Mac and Linux, you can use `minipro` (<https://gitlab.com/DavidGriffith/minipro>). For Windows, the official tool from the manufacturer can be downloaded from the very non-shady looking website at <http://forums.xgecu.com/viewthread.php?tid=20&page=1&extra=#pid23>.

The lab computers already have both Neo Hex Editor and the XGPro Application software installed.

## Pro Tips

1. You should include a bypass capacitor between power and ground on every power/ground rail that you hook up. (Even though Ben doesn't do it in the video.)
2. Be **very** careful removing the EEPROM chip. It is easy to break off pins.