15-348: Embedded Systems
Fall 2022
Lab 9: Adding RAM
Due: Beginning of lab time on Thursday, October 13, 2022

Introduction

This hardware lab consists of adding RAM to the 6502 microprocessor so that our programs can make use of a stack.

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

Adding RAM

Watch the following videos:
https://www.youtube.com/watch?v=xBjQVxVxOxc
https://www.youtube.com/watch?v=i_wrxBdXTgM
https://www.youtube.com/watch?v=omI0MrTWiMU

What to Demo

During your demonstration, we expect you to show us the hello world program, with subroutines, printing on the screen.

Additional Resources

- To save you time, the following binary uses subroutines to print hello world to the screen: https://web2.qatar.cmu.edu/cs/15348/labs/09/helloworld-stack.bin
  You need to reflash your EEPROM with this program, and not use the previous program.

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. You may wish to run extra power/ground wires from the top of your board (where you plug in the power source) to the rails where you power the screen. Without this, you may get intermittent errors. (I did, on my board, until I added the extra wires.)