

Jaime Guevara
Lorenzo Sablan
Team W9
Lab 02
ECE 330L - Spring '19
January 30, 2019

Part 1: Familiarize Yourself with the Toolchain

The tutorial program caused the LEDs to initially all flash (LD3 - LD6) for a little bit, and then our red LED (LD5) remains blinking (i.e. "Cherry Pie"/"Red Apple Pie")

Part 2: Store-bought Cake Mix

2a:

Ingredients supplied:

- carrots.c
- flour.c
- sugar.s
- recipe.ld
- water.h

2b: Make a plan before proceeding

1. Assemble sugar.s to sugar.o
2. Compile flour.c to flour.o - using the ARM GCC compiler
3. Compile carrots.c to carrots.o - using the ARM GCC compiler
4. Link carrots.o flour.o and sugar.o using recipe.ld into carrot-cake.elf (using the ARM linker)
5. Produce a binary executable (carrot-cake.bin) from our ELF file using ARM objcopy

2c: Using the toolchain

The downloaded file, and subsequent carrot-cake.bin, causes a similar effect to pie.bin except LD3 (orange) is the one that remains blinking after the initial flash.

2d: Modify carrots.c to blink a different LED

After modifying carrot.c, the final executable program does the same thing as the previous two but it is LD4 (green LED) that remains blinking.

Steps:

Steps a - d are in Bash

- (a) `$ vim carrot.c` (change Pin_13 to Pin_12 in lines 72 and 76)
- (b) `$ arm-none-eabi-gcc -c -mthumb -mcpu=cortex-m4 -o carrots.o carrots.c`
(re-compile carrots.c)
- (c) `$ arm-none-eabi-ld -T recipe.ld -o carrot-cake.elf carrots.o flour.o sugar.o` (re-link all our files)
- (d) `$ arm-none-eabi-objcopy -O binary carrot-cake.elf carrot-cake.bin`

Steps e - f are in telnet

- (e) `> reset halt` (stop current program)
- (f) `> flash write_image erase carrot-cake.bin 0x08000000`
(flash the modified carrot-cake program onto the m4 chip)