

Assignment 1

Assignment issued on Thursday, April 5, 2018

Honor code: Work on the assignments is to be carried out in the assigned groups of two or three students. You're welcome to talk to classmates about assignments *conceptually*, but the implementation *must* be your own unless otherwise noted. For example, speaking with a classmate about why some bug might be present in your program is okay as long as your classmate doesn't share with you a program that fixes your bug. You should not use any existing code that we don't supply, whether it is online or otherwise. Further, copying code from places like Stack Exchange is prohibited: you will learn much more if you write your own programs.

1.1 Create the first project

Watch the introduction video on using the Keil uVision IDE and create your first project. Write a simple C "main" function and compile it. Debug your project in the simulator as well as on the robot.

1.2 Blinky

Now you are expected to write the equivalent of a "Hello, World!" program for your robot. Since we do not have a text output yet, you will let the robot's LED (see fig. 1) blink in an interval of one second.

- Find out from the schematic which GPIO pin the LED is attached to. Look up the address of that GPIO port and the related bit number in the LPC1778's documentation (NXP UM10470 – see moodle) and add a C header file to your project to define the memory mapped I/O address of that register.
- Write code in main to toggle the LED on and off in one second intervals. Implement the delay between toggling the LED using a *timing loop*. Use measurements to figure out the required number of iterations of the loop.

Hint: If your LED does not blink even if you are sure your I/O definitions are correct, read up on the `volatile` qualifier in the C crash course.

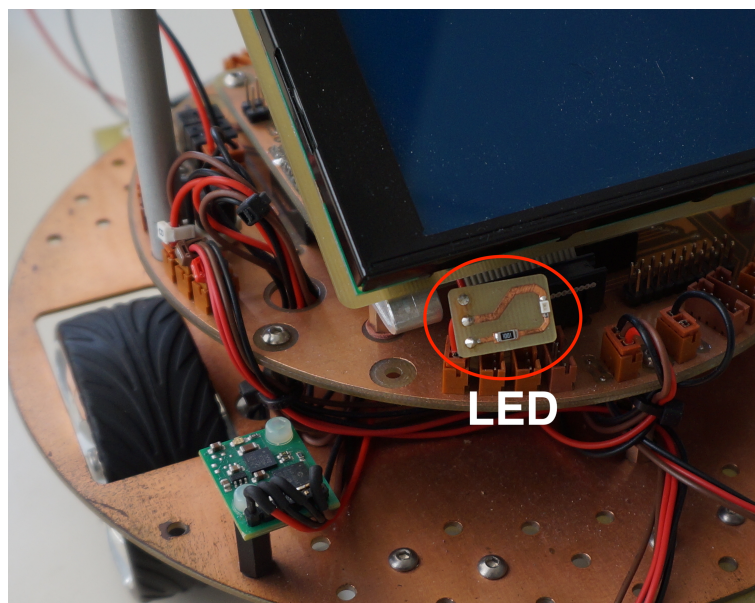


Figure 1: Position of the LED on the robot