ECEN 3002

Digital Design Lab #1

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All Answers Indicated in Blue

Objective: Install and become familiarized with the Silicon Labs’ Simplicity Studio development environment

Due: Sunday, January 19th, 2020 at 11:59pm

8. Pausing the Energy Profiler, with zooming in while using the linear scale, take the average current measurement to determine the following:

* 1. Total current drawn when both LEDs are OFF
     1. 1.80mA
     2. A screenshot of a computer

        Description automatically generated
  2. Total current drawn when one LED is ON
     1. 2.28mA
     2. A screen shot of a computer

        Description automatically generated
  3. Total current drawn when both LEDs are ON
     1. 2.76mA
     2. A screen shot of a computer

        Description automatically generated

1. How much current is one LED consuming?
   1. 0.48mA
   2. Avg current consumed by each LED: ((2.28 – 1.80) + (2.76 – 2.28)) / 2 = 0.48
2. In gpio.c, comment out these lines of code:
   1. GPIO\_DriveStrengthSet(LED0\_Port, gpioDriveStrengthStrongAlternateStrong);
   2. GPIO\_DriveStrengthSet(LED1\_Port, gpioDriveStrengthStrongAlternateStrong);
3. In gpio.c, uncomment these lines of code:
   1. GPIO\_DriveStrengthSet(LED0\_Port, gpioDriveStrengthWeakAlternateWeak);
   2. GPIO\_DriveStrengthSet(LED1\_Port, gpioDriveStrengthWeakAlternateWeak);
4. Rebuild/compile and run the updated program. ***Remember to always switch the power connector from AEM/DBG to BAT and back to reset the Energy Profiler***
5. Pausing the Energy Profiler, with zooming in with the linear scale, take the average current measurement to determine the following:
   1. Total current drawn when both LEDs are OFF
      1. 1.87mA
      2. A screenshot of a computer

         Description automatically generated
   2. Total current drawn when one LED is ON
      1. 2.33mA
      2. A close up of a screen

         Description automatically generated
   3. Total current drawn when two LEDs are ON
      1. 2.81mA
      2. A screen shot of a computer

         Description automatically generated
6. How much current is one LED consuming?
   1. 0.47mA