Lab 11 Deliverables

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**Goals** • Build and test an embedded system.

7) Test the power and crystal. Connect voltmeter(s) to the regulated power line(s) 3.3V and 5V if present. Use a bench supply and limit the input current to 50 mA. Apply power your TM4C123 board (remove power immediately if not 3.3V). Record the current required to run just the processor. When powered, you should be able to see 16 MHz oscillations on both sides of the crystal.

10) Solder components in the order of height. The lowest ones come first. Check for shorts from power to ground before applying power again. If your system has both 3.3 V and 5V power, please place a voltmeter on the 5V output and measure the current while testing it for the first time. Record the current required to run the entire PCB.

Part c) Record a 2-3 minute video of your system and post it on YouTube. Please mention your names at the start and the end of the video. Send the link to your professor and we will create a YouTube channel with all the projects.

**Deliverables (exact components of the lab report)**

A) Objectives

2-page requirements document

B) Hardware Design

Detailed circuit diagram of the system (from Lab 7)

C) Software Design (no software printout in the report)

Briefly explain how your software works (1/2 page maximum)

D) Measurement Data

Include data as appropriate for your system. Explain how the data was collected.

E) Analysis and Discussion (none). The YouTube video is required

**A software and report files must be uploaded as instructed by your TA.**

**Lab 11 grading (different from labintro.pdf)**

Lab 11 is the third of three parts to your own project. The grading rubric for this lab will be different from the one mentioned in the labintro.pdf document.

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**Preparation (20)** shown to TA before lab starts

High level application for the system, graded on completeness rather than style (10)

Complete BOM and having all parts (5)

2-page requirements document (5)

There are prizes to be won! Consider submitting your Lab 11 project to the **TI design competition**. For details ask your professor.

TM4C123, LM4041, LM78M05, LP2950, INA122, LM2937, OPA2350, TLC5616, and TPA731 are all TI devices any three of which satisfy entry rules.

**Checkout (30)**

Project demonstration, quality of design (30)

Description of how the system was tested (5)

**Software Quality (30)**

Modularity and organization (10)

Readability (10)

Functionality (10)

**Report (20)**

Testing procedure and testing data (10)

YouTube video (10)