LAB 14 SIMULATION GRADER (40 points possible)

Grading your lab solution on the simulator does not require the LaunchPad development board. You do not need to implement a display, although having a display makes the system more realistic. Compile (build) your Lab 14 project in Keil, and start the debugger in simulation mode. Execute **Peripherals->TExaS ADC** to open the **TExaS edX Lab 14** window. In this window you can configure the simulator to match the hardware you plan to build.

- 1) Set the ADC channel to 0, 1 or 8;
- 2) Set the value of the potentiometer resistance;
- 3) Set the size of the potentiometer to the distance the armature can travel in cm.

You must put your measurements in the variable named **Distance**, with units 0.001 cm. The grader will set the slide pot to five different positions, and capture the values your program stored into **Distance**. The average error must be less than 0.01 cm. Reset the microcontroller. Enter the **3277** number into the **Num From EdX** field. Click the **Grade** button and wait until grading is finished. Any score above 70 will be considered a passing grade. If you are not satisfied with your score you are allowed multiple submissions.

Enter the **CopyThisToEdX** code from the Lab 14 grading engine:

Check Save

REAL BOARD GRADER (40 points possible)

Grading your lab solution on the real board will require the LaunchPad development board. Interface the slide pot to PE2, PE3 or PE5. A display make the system more useful but is not required for grading. You must connect PD3 (the built-in scope) to the analog signal that you are connecting to your ADC. For example, if you are using PE2, then you will connect both PE2 and PD3 to pin 2 of the potentiometer. Compile (build) your project in Keil, and download it to the board. Enter the **7943** number into the **NumFromEdX** field. You must hit reset and run your software. Make sure the Lab parameter shows Lab 14 and the **7943** is still correct. Click the **Grading** button within the Keil uVision TExaS Grader window. The grader first checks the initialization of the ADC, PLL, and SysTick. Next you will be prompted to move the slide pot to five different positions. Once the slide pot is moved, you must touch SW1 to let the grader know to take a sample. The five positions need not be evenly distributed and do not need to be any specific placement. The five pos

different from each other. After the five points are collected the grader performs a linear regression on the value you write into the variable **Distance** versus the voltage it measures at PD3. An r^2 value greater than 0.96 is required. Any score above 70 will be considered a passing grade. If you are not satisfied with your score you are allowed multiple submissions.

Help

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