

Welcome to Embedded Systems- Shape the World

This page gives a brief overview of the software used in this class.

Command

1) SW1 released
Pass: Initial switch no
2) SW1 not pressed
Pass: Switch not presse
3) SW1 pressed
Pass: Switch pressed ha
4) SW1 held pressed
Pass: LED was toggled s
5) SW1 released
Pass: Releasing switch
6) SW1 not pressed
Pass: Switch not presse
Done grading. Score is 100

TExaS Lab 3

Port E Hardware

TM4C123

SW

PE0

PE1

LED

Port E Registers

DATA: 0x02

PUR: 0x00

LOCK: 0x01

DIR: 0x02

PDR: 0x00

CR: 0xFF

DEN: 0x03

RCGC2: 0x00000010

Grading Controls

Student ID:

Grade

Score: 100

Upload

Code:

TExaS Lab 3

Port F Hardware

TM4C123

SW1

PF0

PF1

PF2

PF3

LED

LED

LED

Port F Registers

DATA:

PUR:

LOCK:

DIR:

PDR:

CR:

DEN:

RCGC2: 0x00000010

Registers

Disassembly

Register

Value

Core

R 0x000C3500

R 0xE000E018

R 0x00B9B92

R 0x00AF1690

R 0x00000351

R 0x4002401C

R 0x400050FC

R 0x40025028

R 0x00000000

R 0x00000000

R 0x00000000

R 0x00000000

R 0x00000000

R 0x20000408

R 0x000006FD

R 0x000006E2

x. 0x81000000

84:

85:

86:

87:

88:

89:

90:

TExaS Lab 5

Traffic Hardware

TM4C123

Walk

South

West

PE2

PE1

PE0

PB5

PB4

PB3

PB2

PB1

PB0

Inputs

Outputs

80 MHz

Red

Yellow

Green

Clock enabled

Clock enabled

Grading Controls

Number from EdX:

Grade

Score: 0

Copy this to EdX:

TExaS Lab 5

Port F Hardware

TM4C123

SW1

SW2

PF0

PF1

PF2

PF3

LED

LED

LED

LED

Port F Registers

DATA: 0x13

PUR: 0x00

LOCK: 0x01

DIR: 0x0A

PDR: 0x00

CR: 0x1E

DEN: 0x0A

RCGC2: 0x00000032

Clock enabled

Logic Analyzer

Setup...

Load...

Save...

Min Time

Max Time

Grid

11.2125 us

0.279315 s

0.5 ms

In

C

DACOUT

3.300000

0.000000

0x00000004 >> 2

TExaS Lab 6

DAC Hardware

TM4C123

Key3

Key2

Key1

Key0

PD3

PD2

PD1

PD0

PB5

PB4

PB3

PB2

PB1

PB0

Inputs

Outputs

Binary-weighted DAC

80 MHz

3.300 volts

0.00 mA

DACOUT

Headphone

32 ohms

Resistance in Kohms

Clock enabled

Clock enabled

Grading Controls

Number from EdX:

Grade

Score: 0

TExaS Lab 6

Port F Hardware

TM4C123

SW1

SW2

PF0

PF1

PF2

PF3

LED

LED

LED

LED

Port F Registers

DATA: 0x19

PUR: 0x11

LOCK: 0x00

DIR: 0x0E

PDR: 0x00

CR: 0x1F

DEN: 0x1F

RCGC2: 0x0000002A

Clock enabled



We are currently developing the software modules needed to run this course. All software will be free to download and install. There will be four different types of modules: 1) there will be an integrated development environment (IDE) for writing, compiling, downloading, and debugging code on the microcontroller; 2) there will be example code that we discuss during the lectures; 3) there will be starter files for each of the lab; and 4) there will be automatic grader software that tests your lab solutions to see if your solution meets specifications.

IDE

We will be using Keil uVision IDE and be writing software in C. These programs only run on Windows (XP, Vista, 7 or 8.) There will be a way install software on a Macintosh so Windows will run on the Macintosh. There are no solutions for Linux.

Example projects

There will be many example projects that run on the LM4F120/TM4C123 LaunchPad.

Lab starter projects

You will begin each lab using a starter project.

TExaS Lab Graders

We have written DLL extensions to the Keil uVision IDE that will evaluate your lab solutions. We have named this set of DLLs as Test EXecute and Simulate or TExaS. There is also an application called TExaSdisplay that provides interaction with your serial port software running on the LaunchPad. Version 1 of TExaSdisplay is like HyperTerminal or PuTTY but much simpler and adds grading for Labs 5, 11 and 14. Version 2 of this application will also provide a simple oscilloscope and simulate the Nokia display used in Labs 14 and 15.

This is how we will grade a lab in simulation.

[YouTube video of grading in simulation mode](#)

This is how we will grade a lab on the real board.

[YouTube video of real board grading](#)

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