EMBEDDED SYSTEMS



Color in the boxes of anything you've already completed, visualize your skills and identify your skill gaps. Get inspired to try new things and tailor the skill tree to suit your own journey by swapping in your own goals.



(set your own goal)

Create a CI/CD System

Write an Arduino Library

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(set your own goal)

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Write a datasheet

(set your own goal)

Edit binary / hex to fix a problem after release

(set your own goal)

Design a low

current circuit to monitor lithium battery usage

for programming and

testing many boards in

set your own goal)

Use trace debugging to troubleshoot a problem

Create a software release process

Write custom BLE GATT

to communicate between

Make a dashboard

Fix 49-day reboot problem with a calendar

(5 Add Machine Learning (ML) to a device Write software

Bit bang a



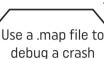
Teach a class on

for monitoring remote units

Use a multi core processor

manufacturing **ग्रेन्स्** Create your own custom PCB

communication driver



devices

Adapt RTOS to a new board

code

S S Optimize assembly

Use multiple architectures in a software image

Blow fuses to test security in a project



Modify a Linker File

Identify a burden

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Debug a project with a logic analyzer

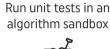
Use



Reverse engineer a

communication protocol

Debug a hard fault on a



Write manufacturing

voltage issue





microcontroller



test software

Check a .lst or .map





Use a camera

in a project

Update firmware



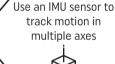
Bring up a custom

board for the first time

Set up a cross compiler

file to troubleshoot a problem

Use a mutex to safeguard a resource





Implement MCU sleep

in a low power project

remotely using secure encryption

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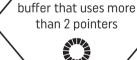
Create a custom



Use closed loop control (PID) to regulate a

project

Implement an رع interrupt service



Create a circular

Update firmware Use a step-through debugger to

remotely (OTA, DFU, FWUP) ş

Use pulse width modulation (PWM) to control RGB LEDs

font

Display text on a

screen in a different

Use a Real Time Operating System (RTOS)

routine (ISR)





troubleshoot a problem

Use Bluetooth Low Energy (BLE) to show a sensor value



Use Pulse Width

Modulation (PWM)

Move a motor

Debounce a

button



Erase and rewrite FLASH memory





Send data to the cloud



Implement a state machine



Use continuity check on a Multimeter (Beepy mode!)



Convert a signal

Understand

how to use a circular

Use I2C communication



Use UART serial

Blink an LED



Use SPI to send/receive data

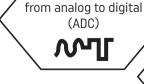


Commit to a version

control system

(such as Github)

Solder in your own header pins



Use REPL in MicroPython to blink an LED چ

communication

Get an Arduino •-**•-•**•

Use a Hardware Simulator eg. WokWi Å



1 tile = 1 point

Total Score





Name: .