VIRTUAL COURSE
BUILD YOUR OWN DATA LOGGER
MODULE 1-3
UNDERSTAND THE DESIGN STACK - SOFTWARE
Device Design Stack

- Device (data logger)
  - Libraries & Drivers
  - Physical Hardware
  - Application
  - Data to SD card
    - internet via wireless, cellular
  - Data into database
Embedded Software

Our Application

Libraries: A friendly interface to the driver plus additional functionality & processing

Drivers controls the physical hardware

Physical Hardware
Drivers

- Provides access to the hardware at very low level
- Written by manufacturer
- Works on specific hardware and hardware configurations (e.g. specific microcontroller, communications interface/port, pin layout etc)
- Sometimes needs to be updated
Libraries

• Software that interfaces between the driver and the application
• A friendly Application Programming Interface (API)
• Written by manufacturers and other programmers
• Usually written for specific hardware configuration
• If using Arduino or Arduino-compatible hardware, usually a library already written for it
• Good chance it will work on your hardware configuration
Libraries

- Includes driver + other processing + other functionality
- DHT11 library has an option to convert the temperature from Celsius to Fahrenheit
- As application developers, up to us whether we use the functionality
- Libraries tell us what we can do in our application
- Documentation of varying quality

Therefore:

- Need to test the libraries work as expected on our hardware configuration, and explore what functionality they offer.
- We’ll be using a command line library to test this
Application

- What we’re writing
- Accesses and controls the hardware through the library
- Use the command line library to build our application

Let’s start building!
COMING UP - MODULE 2
SETTING UP ARDUINO IDE & INTRO TO WILDLLOGGER