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Introduction

Hi there!

If you're looking to subscribe to AdaBox, click here!

If you're here, it's because you were given the gift of electronics with an AdaBox! Perhaps you are a beginner who is getting started with your AdaBox. Or maybe you just want to relive what it's like being a beginner at electronics again. But most of all, you want to learn how to build and make creative, awesome stuff with electronics, graphics, and coding! (If, rather than learn all that, you'd like to look at pictures of cats instead, please check https://www.adafruit.com/galleries/cats-of-engineering)

And, you're in luck: there's never been a better time. Seriously. We're not just saying that. It's wild how great a time this is for you to learn electronics, coding, sensors, and wireless Bluetooth LE magic with images, lights, and sound!

Gone are the days where you need thousands of dollars of equipment and a physics/math background. Nowadays, if you want to learn to work with electronics and code microcontrollers, you can jump right in for $100 or less and any sort of computer. And we're talking about learning a lot of electronics, graphics, coding, and Bluetooth LE wireless action - from the basics of setting up a microcontroller, to customizing your graphics on a beautiful TFT display, and doing it wirelessly! Soon you'll be taking control of your BLE devices like never before, and using them with your CLUE!

Who is this for?

Anyone who is interested in learning how to program and build interactive projects, and with access to a modern web browser. That's pretty much the minimum. Remember, this guide is specifically for people who have purchased or received an AdaBox subscription!

You don't need to know a lot of physics or math, and just like an Art Degree isn't required for making art and being creative, you don't need to have a computer science or mechanical engineering degree. It helps if you're comfortable using computers but that's a skill most people pick up through life.

If you know how to program already - great! If not, don't worry, we'll teach you enough to be dangerous.
Who isn't this for?

While you can follow along without an AdaBox, it will not make as much sense unless you have all of the components and more which either came as a gift or purchased yourself - remember, the goal is helping beginners!

This guide is also not for cuttlefish. Cephalopods are awesome, but they prefer analog tools.

If you're an expert, please visit our thousands of other tutorials and jump right in at learn.adafruit.com

Who are you?

Great question. This is me:

I'm Ladyada, and I love to teach people how to build stuff and how they can be creative with technology.

So, are you ready?

Let's do this thing!

Unboxing Adabox 015
Hey - do you feel like you don't have a clue? Do you wanna get a clue? In this ADABOX we will give you a clue... the Adafruit CLUE!

The CLUE is a sensor-packed development board with a small colorful screen and a lot of sensors. To make it compatible with existing projects, we made it the same shape and size as the BBC micro:bit and with the same edge-connector on the bottom with five big pads so it will fit into your existing robot kit or 'bit add-on.

Each CLUE comes with a Nordic nRF52840 Bluetooth microcontroller, two buttons, 1.3" 240x240 color TFT, temperature, humidity, and barometric pressure, triple-axis accelerometer, gyroscope and magnetometer, proximity/light/color/gesture sensor, microphone, and a buzzer. Everything you need to learn how to interact and analyze the world around you.

Have you been eagerly awaiting your ADABOX for a while? It has arrived! Thank you to everyone around the world who has been patient as this box made its way to you. There's no better time to get an ADABOX, with lots of fun electronic projects you can build at home by yourself or with family. Thank you from the entire Adafruit team here in NYC!

A huge thank you to Digi-Key for going above-and-beyond to help support Adafruit over the last few months. Digi-Key's support made this box possible, and we are so excited to see what you will build!

You ADABOX has been patiently waiting to be shipped for longer than usual, the PVC tubing may have left a noticeable odor. To clear out the odor, leave your ADABOX parts out in a ventilated room for an hour or two.
AdaBox 015 Contents

Adafruit

NORDIC
nRF52840 MCU with Bluetooth LE

ST
LSM6DS3 Accelerometer/
  Gyroscope &
  LIS3MDL magnetometer
to give 9-DoF motion

BROADCOM
APDS-9980 Proximity
  Light & Gesture Sensor

Digi-Key

SENSIRION
SHT30
  Temperature/Humidity Sensor

Bosch
BMP280 temperature, barometric pressure, altitude sensor
Adafruit CLUE
The star of the show! With a color display, tons of sensors, micro:bit compatibility, and Arduino or CircuitPython support for a ton of awesome projects.
3 x AAA battery pack and 3 x AAA alkaline batteries
To power your CLUE anywhere you wish.
Adafruit Bonsai Buckaroo
A plant care helper for CLUE. Bolt it on with 5 screws to get a buzzer/beeper, 3V DC motor driver, and alligator clips for connecting a DIY soil sensor
Two alligator clip cable leads + two stainless steel nails
To create a DIY soil moisture sensor
Water pump (3V DC motor) + clear PVC tubing
To automatically water your plants from a reservoir
Starter Planter Pot
This small plastic planter pot will get you started with your very first planting - just add soil + a few seeds to get sprouting.

Your planter may be a little squished from shipping. Please smooth it out once you receive it - it will work just fine even if a little wrinkled!

Fingerless glove
You can attach the CLUE to the glove to create hand-motion projects

(You may get one or two gloves, but you only need one for the projects)

Face Mask
We have been giving these KN95 masks out to New Yorkers, nurses, doctors, and anyone else who needs a face covering.

This KN95 Face Mask is made of strong filter material, is easy to wear, and can be re-used if carefully removed and stored in a paper bag after each use (). Don't share this mask, one mask per person only! Afterward, they should be carefully removed and thrown out. Please check this document for information on how to put on and safely remove a face mask. ()
Double Stick Foam Tape
Adhere stuff to stuff. Useful when crafting many of our CLUE projects!

Adafruit CLUE
Adafruit CLUE ()

Bonsai Buckaroo
Bonsai Buckaroo ()

Custom CLUE Badge
Custom CLUE Badge ()

Flower Care Robot
Flower Care Robot ()

CLUE Egg Drop Experiment
CLUE Egg Drop Experiment ()

Sensor Plotter
Sensor Plotter ()

No-Touch Hand Wash Timer
No-Touch Hand Wash Timer ()
I Ching Caster

Metronome CLUE

CLUE BLE MIDI Glove

Step Counter

BLE Advertising Beacons

Dice Roller

CLUE Metal Detector

BLE BBQ Temperature Monitor

Slideshow Purse
BLE Sensor Nodes

Yoga Pose Chime

LightPaint Stick

Vertical Garden Weather Visualizer

Teletype Transmitter

CLUE Bicycle Speed/Cadence Sensor

Pyloton Cycling Computer

CLUE Case

CLUE Slim Case
Demo Code

So you've had fun playing around with all these great CLUE based projects. But then you remember that cool demo that was on the CLUE when you got your AdaBox. Want that back? Sure thing. Here's the code.

Download this UF2 file:

ADABOX15_DEMO.UF2

Double press reset to put your CLUE in bootloader mode and drag that UF2 file to the BOOT folder and you should be back to spirit level goodness.

And you can do this again anytime you want. So don't feel scared to reprogram the board and lose this cool demo.

Source Code

If you want to see the source code behind the demo, here are the links. These are written in Arduino.

The main demo code is here:

AdaBox 15 CLUE Plotter

The spirit level code is here:

Spirit Level
The plotter code is here:

Arcada Plotter

Happy plotting!