

ARDUINO BOOTCAMP : LEARNING THROUGH PROJECTS

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List of Parts by Projects

Simple Projects

First Project

- Arduino Uno
- USB Cable
- Breadboard
- Red LED
- 220 Ω resistor
- Connecting Wires

Controlling an LED with a Push Button Switch

- Arduino Uno
- USB Cable
- Breadboard
- Red LED
- 220 Ω and 1k Ω resistor
- Push button switch
- Connecting Wires

Controlling an Piezo Buzzer with a Push Button Switch

- Arduino Uno
- USB Cable
- Breadboard
- Piezo Buzzer
- 330 Ω and 1k Ω resistor
- Push button switch
- Connecting Wires

Using a Potentiometer to Adjust LED Brightness

- Arduino Uno
- USB Cable
- Breadboard
- Red LED
- 220 Ω resistor
- 10 k Ω potentiometer
- Connecting Wires

Controlling a CPU Fan - User Input

- Arduino Uno

- USB Cable
 - Breadboard
 - CPU Fan
 - 220 Ω resistor
 - MJ182 npn Power Transistor
 - 12V DC Supply - Arduino External Power Supply
 - Connecting Wires
-

Controlling a CPU Fan - Button Control

- Arduino Uno
 - USB Cable
 - Breadboard
 - CPU Fan
 - 220 Ω resistor
 - MJ182 npn Power Transistor
 - 12V DC Supply - Arduino External Power Supply
 - Push button switch
 - Connecting Wires
-

LED Reaction Game

- Arduino Uno
 - USB Cable
 - Breadboard
 - 3 x 220 Ω resistor
 - 3 LEDs (Red, Green and Yellow)
 - 1 k Ω resistor
 - Push button switch
 - Connecting Wires
-

Intermediate Projects

Buzzer Sound Recall Game

- Arduino Uno
 - USB Cable
 - Breadboard
 - 3 x 220 Ω resistor
 - 3 x 330 Ω resistor
 - 3 LEDs (Red, Green and Yellow)
 - 3 Piezo Buzzers
 - 3 Push button switches
 - Connecting Wires
-

Ultrasonic Sensor Alarm

- Arduino Uno

- USB Cable
 - Breadboard
 - 3 x 330 Ω resistor
 - HC-SR04 Ultrasonic Sensor
 - Red and Green LED
 - Piezo Buzzer
 - Connecting Wires
-

Digital Dice

- Arduino Uno
 - USB Cable
 - Breadboard
 - 7 x 220 Ω resistor
 - 7 Segment Display (Common Cathode)
 - Push button switch
 - Connecting Wires
-

Infrared Repeater (Various projects)

- Arduino Uno
 - USB Cable
 - Breadboard
 - IR Receiver TSOP382
 - IR LED
 - 220 Ω resistor
 - 3 Push button switches
 - Connecting Wires
-

Joystick Matrix LED (Various projects)

- Arduino Uno
- USB Cable
- Breadboard
- Thumb joystick
- 8 x 8 LED Matrix
- Max7219 Dot Matrix Module
- Connecting Wires

Advanced Projects

Stopwatch (Various projects)

- Arduino Uno
- USB Cable
- Breadboard
- 4 Digit Seven Segment Display
- 7 x 220 Ω resistor
- 8-bit shift register (SN74HC595)
- Push button switch
- Connecting Wires

Pan-Tilt Assembly Control (Various projects)

- Arduino Uno
- USB Cable
- Breadboard
- 2 micro servos
- Wii nunchuk
- Arduino nunchuk adapter
- Pan tilt assembly frame
- 9V Battery
- 9V Battery holder
- Connecting Wires

Online Weather Station (Various projects)

- Arduino Uno
- USB Cable
- Breadboard
- Arduino Wifi Shield
- Standard 1602 LCD
- Male pin header strip (16 count)
- 220 Ω resistor
- 10 k Ω potentiometer
- Connecting Wires

Remote Controlled Car

- Arduino Uno
- USB Cable
- Breadboard
- Car Kit
- Bluetooth module
- H-Bridge Motor Driver
- 9V Battery
- 9V Battery holder

- 4 x 1.5 AA batteries
- 4 x 1.5 AA battery holder
- Double sided-tape
- Zip ties
- Android mobile device
- Connecting Wires

Open Source Phone

- Arduino Uno
- USB Cable
- Breadboard
- Adafruit FONA 800 breakout board starter pack
 - FONA 800 Mini Cellular Breakout Board
 - Right-angle Mini GSM/Cellular Quad-Band Antenna - 2dBi SMA Plug
 - Lithium Ion Polymer Battery - 3.7v 1200mAh
 - Cell-phone TRRS Headset - Earbud Headphones w/ Microphone
- Connecting Wires

Itemized Parts List

Arduino Kits

Amazon:

https://www.amazon.com/Elegoo-Project-Tutorial-Prototype-Expansion/dp/B01D8KOZF4/ref=sr_1_1?s=pc&ie=UTF8&qid=1481925883&sr=1-1-spons&keywords=arduino+starter+kit&psc=1

https://www.amazon.com/Arduino-Ultimate-Starter-instruction-guide/dp/B00BT0NDB8/ref=sr_1_4?s=pc&ie=UTF8&qid=1481925963&sr=1-4&keywords=arduino+starter+kit

Adafruit:

<https://www.adafruit.com/products/1078>

Sparkfun:

Inventor's Kit

<https://www.sparkfun.com/products/14094>

Connecting wires

Amazon:

https://www.amazon.com/Boundto-120pcs-Multicolored-Female-Breadboard/dp/B00ZWEFWO8/ref=sr_1_2?s=pc&ie=UTF8&qid=1481926432&sr=1-2&keywords=male+connection+wires

https://www.amazon.com/assemblies-Male-Male-Female-Female-Female-Male-RBTMKR/dp/B01C3J41GY/ref=sr_1_7?ie=UTF8&qid=1482005725&sr=8-7&keywords=arduino+male-female+connecting+wires

Sparkfun:

Male to Male

<https://www.sparkfun.com/products/12795>

Male to Female

<https://www.sparkfun.com/products/12794>

Female to Female

<https://www.sparkfun.com/products/12796>

The following can all be found in an Arduino Kit :

Breadboard

Assortment of Resistors

Potentiometer

LEDs

Piezo Buzzer
Push Button Switch
Ultrasonic Sensor
Connecting wires
Seven Segment LEDs (single and four digit)

Push Button Switches

https://www.amazon.com/Gikfun-12x12x7-3-Tactile-Momentary-Arduino/dp/B01E38OS7K/ref=sr_1_2?ie=UTF8&qid=1482004746&sr=8-2&keywords=arduino+push+button+switch

<http://www.mouser.com/ProductDetail/TE-Connectivity-Alcoswitch/FSM2JSMAATR/?qs=sGAepiMZZMvbyeSUH4qH%2fH49a3du0w9x>

<https://www.sparkfun.com/products/9190>

Piezo Buzzers

https://www.amazon.com/a12081600ux0477-Diameter-Terminals-Electronic-Continuous/dp/B00B0Q4KKO/ref=sr_1_2?ie=UTF8&qid=1482004991&sr=8-2&keywords=piezo+buzzer

https://www.amazon.com/uxcell-Industrial-Active-Electronic-Buzzer/dp/B016FCBBT0/ref=sr_1_6?ie=UTF8&qid=1482004991&sr=8-6&keywords=piezo+buzzer

<https://www.sparkfun.com/products/7950>

CPU Fan

https://www.amazon.com/Cooler-Master-SickleFlow-120-Radiators/dp/B0026ZPFCK/ref=sr_1_7?s=pc&ie=UTF8&qid=1481927074&sr=1-7&keywords=cpu+fan

https://www.amazon.com/Cooler-Master-Bearing-Cooling-Computer/dp/B002R9RBO0/ref=sr_1_9?s=pc&ie=UTF8&qid=1481927138&sr=1-9&keywords=cpu+fan

Arduino External Power Supply (9V)

https://www.amazon.com/Arduino-power-supply-adapter-110V/dp/B018OLREG4/ref=sr_1_11?ie=UTF8&qid=1482121936&sr=8-11&keywords=arduino+power+supply

https://www.amazon.com/Power-Adapter-Arduino-inches-Supply/dp/B00NTUONKQ/ref=sr_1_10?ie=UTF8&qid=1482121936&sr=8-10&keywords=arduino+power+supply

MJE182 Power Transistor

<http://www.mouser.com/ProductDetail/ON-Semiconductor/MJE182/?qs=HVbQIW5zcXXxi31d6t%252bGpQ%3D%3D>

Ultrasonic Sensor (HC-SR04)

https://www.amazon.com/SunFounder-Ultrasonic-Distance-Duemilanove-Rapsberry/dp/B00E0NXTJW/ref=sr_1_5?ie=UTF8&qid=1482005832&sr=8-5&keywords=ultrasonic+sensor

https://www.amazon.com/Ultrasonic-Sensor-Distance-Measuring-Microcontroller/dp/B0116HMD8W/ref=sr_1_6?ie=UTF8&qid=1482005832&sr=8-6&keywords=ultrasonic+sensor

<https://www.sparkfun.com/products/13959>

Seven Segment LED - Common Cathode

<http://www.mouser.com/ProductDetail/Broadcom-Avago/HDSP-513A/?qs=sGAEpIMZZMvkC18yXH9ilsSFKp4VzurGGrCZxmUsANs%3d>

4 Digit Seven Segment - Common Anode

https://www.amazon.com/BephaMart-Segment-Digital-Display-Shipped/dp/B01LXHK90E/ref=sr_1_4?s=pc&ie=UTF8&qid=1481927438&sr=1-4&keywords=seven+segment+led+common+anode

<http://www.mouser.com/ProductDetail/Lite-On/LTC-2623G/?qs=sGAEpIMZZMvkC18yXH9illdXaCJr4RZ8AwAIFANnHvQ%3d>

IR LED & IR Receiver

Sparkfun IR Kit

<https://www.sparkfun.com/products/13235>

IR Receiver: **TSOP38238**

<https://www.sparkfun.com/products/10266>

<http://www.mouser.com/ProductDetail/Vishay-Semiconductors/TSOP38238/?qs=sGAEpIMZZMvnwheKzbT%252bFvg%2fdck9f6S7>

Thumb Joystick

https://www.amazon.com/Gikfun-JoyStick-Breakout-Controller-Arduino/dp/B00RBHO3EE/ref=sr_1_7?s=pc&ie=UTF8&qid=1481928036&sr=1-7&keywords=arduino+joystick

https://www.amazon.com/SunFounder-Joystick-Module-Arduino-Raspberry/dp/B013G8KSB8/ref=sr_1_8?s=pc&ie=UTF8&qid=1481928036&sr=1-8&keywords=arduino+joystick

https://www.amazon.com/HiLetgo-JoyStick-Breakout-Joystick-Controller/dp/B00P7QBGD2/ref=sr_1_4?s=pc&ie=UTF8&qid=1481928036&sr=1-4&keywords=arduino+joystick

8 x 8 Matrix and Max7219 Panel

https://www.amazon.com/uxcell-MAX7219-Matrix-Display-Module/dp/B00NQB4ICG/ref=sr_1_2?ie=UTF8&qid=1482006394&sr=8-2&keywords=max7219

https://www.amazon.com/MAX7219-Microcontroller-Compatible-Atomic-Market/dp/B00TNNDH0A/ref=sr_1_4?ie=UTF8&qid=1482006394&sr=8-4&keywords=max7219

https://www.amazon.com/Red-Dot-Matrix-Module-MAX7219/dp/B01GNKSC6Y/ref=sr_1_10?ie=UTF8&qid=1482006394&sr=8-10&keywords=max7219

Shift Register (SN74HC595 8-bit)

<https://www.sparkfun.com/products/13699>

https://www.amazon.com/Texas-Instruments-SN74HC595N-Registers-3-State/dp/B01J6Q1UIY/ref=sr_1_5?ie=UTF8&qid=1482006596&sr=8-5&keywords=shift+register

https://www.amazon.com/Texas-Instruments-SN74HC595N-Registers-3-State/dp/B01J6WI7RA/ref=sr_1_4?ie=UTF8&qid=1482006596&sr=8-4&keywords=shift+register

Wii Nunchuk

https://www.amazon.com/Generic-B002GEKIOG1-Nunchuk-Nunchuck-Controller/dp/B002GEKIOG/ref=sr_1_6?s=videogames&ie=UTF8&qid=1482006701&sr=1-6&keywords=wii+nunchuck

https://www.amazon.com/Replacement-Nintendo-Nunchuk-Nunchuck-Motion-Plus/dp/B005JR7FRA/ref=sr_1_7?s=videogames&ie=UTF8&qid=1482006701&sr=1-7&keywords=wii+nunchuck

Arduino Nunchuk Adapter

https://www.amazon.com/Gikfun-Adapter-shield-Module-Arduino/dp/B00RK1VKUQ/ref=sr_1_1?ie=UTF8&qid=1482006790&sr=8-1&keywords=arduino+nunchuck+adapter

https://www.amazon.com/Arduino-Compatible-WiiChuck-Nunchuck-Adapter/dp/B01MXDHM26/ref=sr_1_4?ie=UTF8&qid=1482006790&sr=8-4&keywords=arduino+nunchuck+adapter

Micro Servo

https://www.amazon.com/TowerPro-SG90-Micro-Servo-2pk/dp/B01608II3Q/ref=sr_1_3?ie=UTF8&qid=1482006868&sr=8-3&keywords=mini+servo

https://www.amazon.com/Adafruit-Mini-Pan-Tilt-Kit-Assembled/dp/B00XW2NR12/ref=sr_1_16?ie=UTF8&qid=1482006949&sr=8-16&keywords=micro+servo

Pan-Tilt Frame

<https://www.adafruit.com/products/1968>

Assembled:

<https://www.adafruit.com/products/1967>

9V Battery Holder with Barrel Connector

<https://www.adafruit.com/products/80>

https://www.amazon.com/AspenTek-Battery-Accessories-5-5mm-Arduino/dp/B00NIP0P9U/ref=sr_1_2?ie=UTF8&qid=1482121785&sr=8-2&keywords=9v+barrel

1602 LCD

<https://www.adafruit.com/products/181>

https://www.amazon.com/Arducam-Display-Controller-Character-Backlight/dp/B019D9TYMI/ref=sr_1_3?ie=UTF8&qid=1482007191&sr=8-3&keywords=1602+lcd

Male Header Pins

https://www.amazon.com/15Pcs-2-54-Single-11MM-Header/dp/B00FR19WQA/ref=sr_1_1?ie=UTF8&qid=1482007228&sr=8-1&keywords=male+header+pins

Wifi Shield

<http://www.ebay.com/itm/WIFI-Development-Board-ESP-12E-Based-ESP8266-Shield-for-Arduino-UNO-OTA-WeMos-D1-/291917155585?hash=item43f79e4d01:g:5FYAAOSw44BYCKrt>

<http://www.ebay.com/itm/WIFI-Development-Board-ESP-12E-Based-ESP8266-Shield-for-Arduino-UNO-OTA-WeMos-D1-/371717727143?hash=item568c1a63a7:g:AboAAOSwo4pYClqC>

Sparkfun Wifi Shield (Will need to solder stackable headers)
<https://www.sparkfun.com/products/13287>

Stackable Header Kit
<https://www.sparkfun.com/products/11417>

Car Kit

<http://www.ebay.com/itm/2WD-Smart-Motor-Robot-Car-Chassis-Battery-Box-Kit-Speed-Encoder-for-Arduino-DI-/252426895398?hash=item3ac5d0c026:g:7IkAAOSw3YNXYhcT>

<http://www.ebay.com/itm/2WD-Robot-Car-Chassis-Kit-For-Arduino-Raspberry-Pi-w-Encoder-and-Battery-Box-/321798608491?hash=item4aecb1166b:g:FuoAAOSwoBtW40lQ>

https://www.amazon.com/INSMA-Chassis-Encoder-Battery-Arduino/dp/B01BXPETQG/ref=sr_1_3?ie=UTF8&qid=1482008031&sr=8-3&keywords=arduino+car+kit

https://www.amazon.com/Ardokit-Chassis-Encoder-Battery-Arduino/dp/B00K5OWHXO/ref=sr_1_6?ie=UTF8&qid=1482008031&sr=8-6&keywords=arduino+car+kit

Bluetooth Module

https://www.amazon.com/Phantom-YoYo-Arduino-Bluetooth-Wireless/dp/B009DZQ4MG/ref=sr_1_4?ie=UTF8&qid=1482008139&sr=8-4&keywords=arduino+bluetooth+module

https://www.amazon.com/Pass-Through-Communication-Compatible-Atomic-Market/dp/B00TNOO438/ref=sr_1_5?ie=UTF8&qid=1482008139&sr=8-5&keywords=arduino+bluetooth+module

Motor Driver

https://www.amazon.com/Super-H-Bridge-Driver-Module-Arduino/dp/B00NN6EB3U/ref=sr_1_11?ie=UTF8&qid=1482008465&sr=8-11&keywords=arduino+motor+driver

http://www.miniinthebox.com/l9110-dual-channel-h-bridge-motor-driver-module-for-arduino_p903443.html?currency=USD&litb_from=paid_adwords_shopping&utm_source=google_shopping&utm_medium=cpc&adword_mt=&adword_ct=100793049448&adword_kw=&adword_pos=1o2&adword_pl=&adword_net=g&adword_tar=&adw_src_id=7107338275_427105288_30693738448_pla-21190_2102282&gclid=CjwKEAiA4dPCBRCM4dqhlv2R1R8SJABom9pHzrbpBCtP3Wq_rSm5u8he-htGUUFOBZmVcNws4fUIBoC4Krw_wcB

9V Battery holder in case

https://www.amazon.com/uxcell-5-5mm-Holder-Cover-Battery/dp/B00K86F1O6/ref=sr_1_1?ie=UTF8&qid=1482121669&sr=8-1&keywords=9+v+battery+holder

<https://www.adafruit.com/products/67>

4 x AA Battery holder

https://www.rcplanet.com/Tactic_4_Cell_AA_Battery_Holder_w_Futaba_J_Connect_p/tacm2020.htm?gclid=Cj0KEQiAhNnCBRCqkP6bvOjz_lwBEiQAMn_TMZh0sJmvD4cL3ZmJzfm4JUveR2tzblpMtAosU8IN3laAuxE8P8HAQ

http://www3.towerhobbies.com/cgi-bin/wti0001p?&l=LXKLZ5&P=FR&gclid=Cj0KEQiAhNnCBRCqkP6bvOjz_lwBEiQAMn_TMW8x3EYKy2Kh55QwsBbz3dYSREYTUTsC0EuOxOOBNSYaApBT8P8HAQ

https://www.amazon.com/Tactic-Cell-Battery-Holder-Connector/dp/B002l9V60E/ref=sr_1_1?ie=UTF8&qid=1482121751&sr=8-1&keywords=aa+battery+holder+futaba

https://www.amazon.com/Generic-Battery-Holder-Connector-Arduino/dp/B00O5AZI12/ref=sr_1_12?ie=UTF8&qid=1482121936&sr=8-12&keywords=arduino+power+supply

FONA 800 GSM

Breakout Starter Pack (Recommended - contains everything you need):

<https://www.adafruit.com/products/2522>

Shield (alternative to the breakout board):

<https://www.adafruit.com/products/2468>

Phone components needed if purchased separately (if you opt not to get the starter pack):

[FONA 800 Breakout GSM Board](#)

[Antenna](#)

[LiPo Battery](#)

[Headset](#)

Misc Components to enhance your phone project:

[Mini-Speaker](#)

[Electret Microphone](#)

[Vibrating Motor Disc](#)

[TFT Shield with Resistive Touch](#)