

# Project: An Arduino Linkbot Siren System as Police Car, Ambulance, or Fire Truck

Learn how to control a Linkbot system with Arduino

## Introduction:

[Linkbot](#) is a reconfigurable modular educational robot. Arduino board is a popular open-source single-board microcontroller. [Barobo Arduino](#) provides a user-friendly solution for making and building in the physical world, and integrating sensors into Linkbot systems using Arduino.

In this project, a Linkbot and Arduino are used to build a police car, ambulance, or fire truck with a flashing light. The robot moves with a blinking RGB LED and siren of police car, ambulance, and fire truck. The entire system is controlled by a program with only 19 lines of code!

## Information:

- Grades: 7 – 12
- Duration: 6-20 Hours
- Level: Intermediate (using Arduino)

## Products Used in the Project:

- 1 [Linkbot Super Kit](#)
- 1 [Arduino Uno Starter Kit](#)
- 1 [Linkbot Uno Pack](#)

## Parts Used in the Project:

- 1 Linkbot-I
- 1 Linkbot Dongle
- 1 Ball Caster
- 2 3.5" wheels
- 2 Snap Connector
- 1 Cube Connector
- 1 Arduino board
- 1 Mini breadboard
- 1 RGB LED
- 1 Bluetooth module
- 1 9V battery holder

- 1 9V battery (16x 9v 600 Amh Li-ion Rechargeable Batteries are included in [16 Linkbot Uno Pack Classroom Bundle](#))
- Some jump wires from Arduino Uno Starter Kit
- Some screws from Linkbot Uno Pack

### Setup:

An Arduino Linkbot Siren System as a police car, ambulance, or fire truck with a flashing light is shown in Figure 1. The detailed wiring information can be found in section 11 “Adding Sensors to Linkbot Using Linkbot Uno Pack” of the textbook [Learning Physical Computing with Arduino for the Absolute Beginner](#). The Complete PDF files is available to you if you purchase a [Barobo Arduino Uno Starter Kit](#).

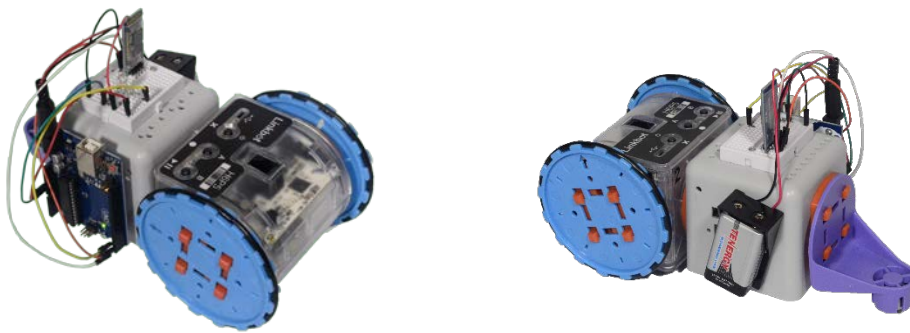


Figure 1: An Arduino Linkbot Siren System as a police car, ambulance, or fire truck.

### Programming the Linkbot Siren System in Ch:

A Ch program linkbotSiren.ch can be used to control this Linkbot Siren System. Details for each robot member function for CLinkbotI can be found in the textbook “*Learning Robot Programming with Linkbot for the Absolute Beginner*”. How to write a C function can be found in the textbook “*Learning Computer Programming with Ch for the Absolute Beginner*”. The entire PDF files for these two textbooks are available in C-STEM Studio. The detailed information Arduino functions can be found in textbook [Learning Physical Computing with Arduino for the Absolute Beginner](#).

```
/* File: linkbotSiren.ch
Drive a robot and play a siren at the same time
while making an RGB LED blink */
#include <arduino.h>
#include <linkbot.h>
CLinkbotI robot;
double radius = 1.75;
double trackwidth = 3.69;

//Set up pin 3 for output
int ledPin = 3;

pinMode(ledPin, OUTPUT);
digitalWrite(ledPin, HIGH);

//Play police car siren while the robot drives forward
robot.driveDistanceNB(45, radius);
robot.playMelody(PoliceCarSiren, 1);
//wait for driveDistanceNB() to finish
robot.moveWait();

robot.turnRight(180, radius, trackwidth);

//Play an ambulance siren while the robot drives backward
robot.driveDistanceNB(45, radius);
robot.playMelody(AmbulanceSiren, 1);
robot.moveWait();

robot.turnRight(180, radius, trackwidth);

//Play a fire truck siren while the robot drives forward
robot.driveDistanceNB(45, radius);
robot.playMelody(FireTruckSiren, 1);
robot.moveWait();
```