

LESSON 3: LED KNIGHT RIDER

INTRODUCTION

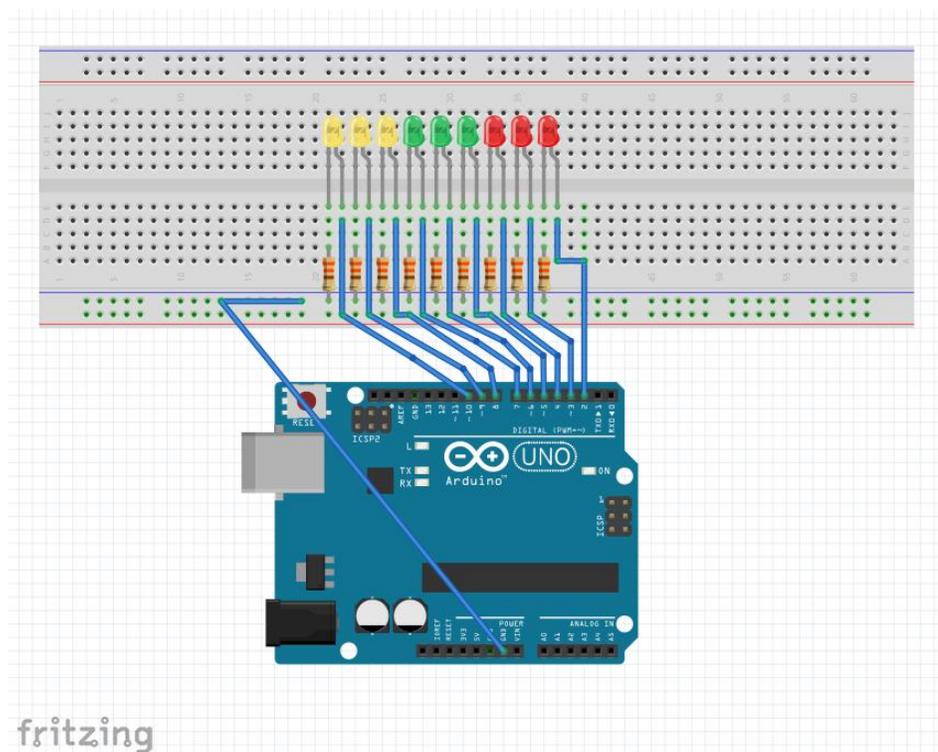
Ever watch knight rider movie? The car (KITT) have a very cool light bar in front and where most people like to have one of it. Here, we are going to make one of it using Arduino Uno interfacing with 9 LEDs. It is just like interfacing a single LED to the Arduino. A program is then loaded to the Arduino that will turn the nine LEDs into a "Knight rider" display.

COMPONENTS:

- 1x Arduino Uno Board
- 1x USB cable
- 1x breadboard
- 9x LEDs
- 9x 330Ω resistor
- Jumper wire

CONNECTION

STEP 1: There are total of 9 LEDs using which the anode are all connected to digital port (2,3,4,5,6,7,8,9,10) which BLUE wires. On other hand, the cathode of LEDs are connected to 330Ω resistor then go to ground (GND).

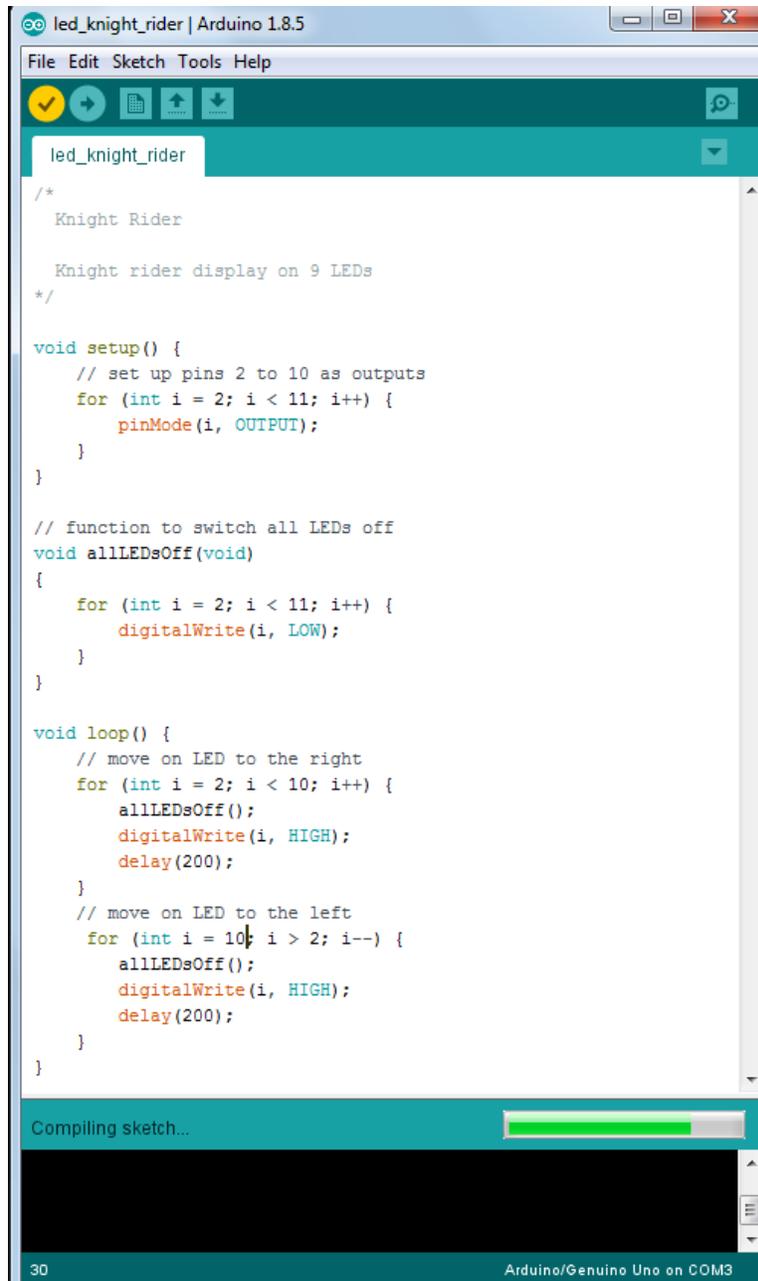


STEP 2: Program

```
/*  
Knight Rider  
  
Knight rider display on 9 LEDs  
*/  
  
void setup() {  
  // set up pins 2 to 10 as outputs  
  for (int i = 2; i < 11; i++) {  

```

STEP 3: Compile the code



The screenshot shows the Arduino IDE interface with the sketch 'led_knight_rider' open. The code is as follows:

```
/*
  Knight Rider

  Knight rider display on 9 LEDs
*/

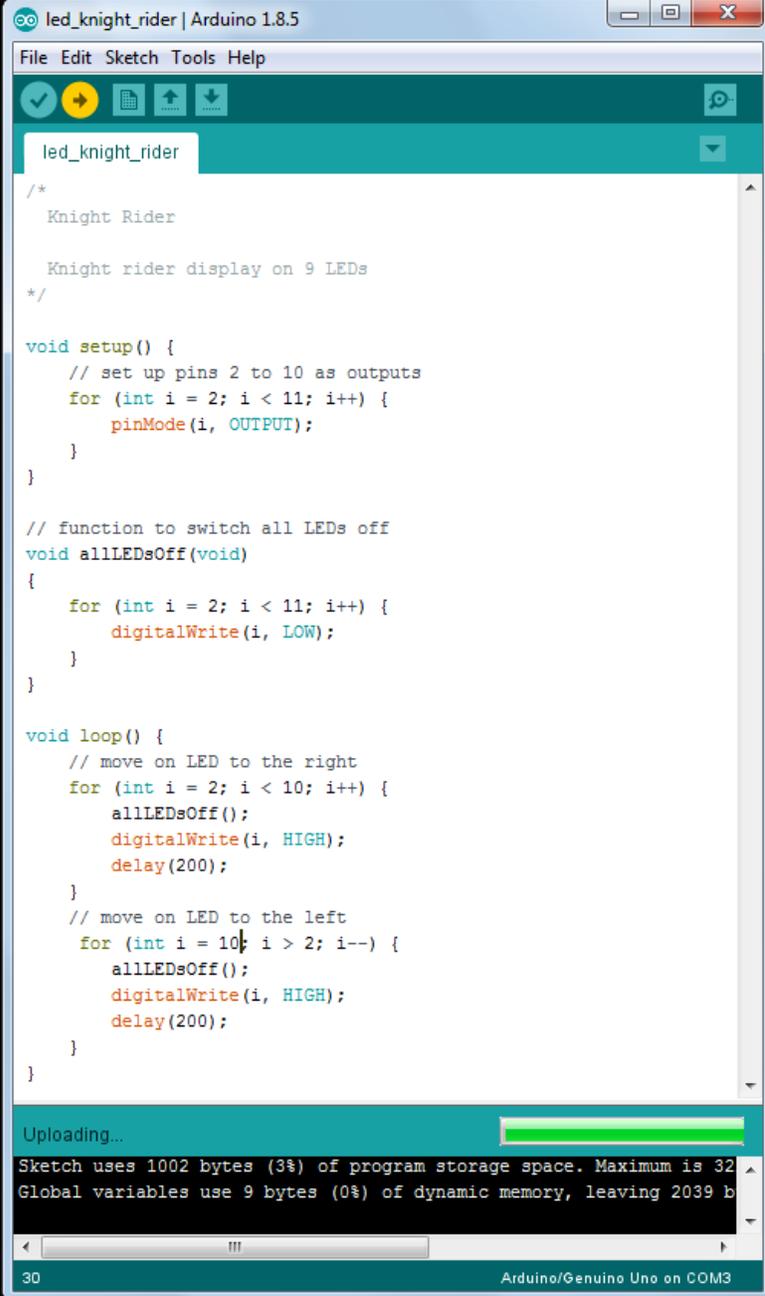
void setup() {
  // set up pins 2 to 10 as outputs
  for (int i = 2; i < 11; i++) {
    pinMode(i, OUTPUT);
  }
}

// function to switch all LEDs off
void allLEDsOff(void)
{
  for (int i = 2; i < 11; i++) {
    digitalWrite(i, LOW);
  }
}

void loop() {
  // move on LED to the right
  for (int i = 2; i < 10; i++) {
    allLEDsOff();
    digitalWrite(i, HIGH);
    delay(200);
  }
  // move on LED to the left
  for (int i = 10; i > 2; i--) {
    allLEDsOff();
    digitalWrite(i, HIGH);
    delay(200);
  }
}
```

At the bottom of the IDE, a progress bar indicates 'Compiling sketch...' is in progress. The status bar at the very bottom shows '30' and 'Arduino/Genuino Uno on COM3'.

STEP 4: Upload the sketch to the Arduino Uno board.



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led_knight_rider
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  Knight Rider

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  for (int i = 2; i < 10; i++) {
    allLEDsOff();
    digitalWrite(i, HIGH);
    delay(200);
  }
  // move on LED to the left
  for (int i = 10; i > 2; i--) {
    allLEDsOff();
    digitalWrite(i, HIGH);
    delay(200);
  }
}
```

At the bottom of the IDE, the upload progress bar is shown with the text 'Uploading...'. Below the progress bar, the following information is displayed:

```
Sketch uses 1002 bytes (3%) of program storage space. Maximum is 32
Global variables use 9 bytes (0%) of dynamic memory, leaving 2039 b
```

The status bar at the bottom of the IDE shows '30' and 'Arduino/Genuino Uno on COM3'.

RESULT:

The leds turn from right to left and then backwards.