Title of script: **Lighting LED through Scilab Arduino Toolbox**
Author:
Keywords: Scilab, Arduino, LED

	Narration
Show Slide	Welcome to the spoken tutorial to turn the LED on using the Arduino Uno board. I am Kannan Moudgalya. We shall use Arduino IDE for this.
Show Slide	In this tutorial we will learn to 1. Connect an Arduino Uno board to a computer 2. Identify the port number 3. Load the firmware on to the Arduino Uno board 4. Turn the LED on using Arduino IDE
Requirements slide	For this tutorial, I am using **1. Windows 8, 64-bit OS** **2. Arduino IDE** **3. Arduino Uno Board** **4. Shield**
Show the web page	I will now explain how to download and install the Arduino IDE Arduino IDE can be downloaded from www.arduino.cc
Demo	On this page, click on the Download tab. On the right hand side, click on the link “Windows ZIP file for non admin install” The donate page will appear. Scroll down and click on “Just download” You may return to this page later and make a donation.
Demo	I have already downloaded this file. It is on the Desktop. It is approximately 140 MB. Hence I will not download it again.
Demo	Right click on this file and extract its content. Do not alter any file or directory structure.

	Let me switch to the slides
Show slide	Place the Shield on the Arduino Uno board properly, as shown in the picture. In this configuration, the shield will snugly fit into the Arduino Uno board, with a gentle push. If you try to connect it in any other way and apply force, you will break the boards. You should have a USB cable, as shown in the slide. The square end of this cable is shown in the slide. Where on the Arduino Uno board you have to connect is also shown. Connect the two. Connect the other end of the USB cable with your computer. One or two small LEDs on the Arduino Uno board will light up, if the computer is on. Please note, however, that the LED on the shield will not light up.
Demo	Click on the Start Menu, and then the “Control Panel” Then navigate to “System and Security” Then click on “System” Then choose “Device Manager” Next, click on “Other devices” and locate “Unknown device” Right click on the “Unknown device” Select the “Update Driver Software” option Next, choose the “Browse my computer for Driver software” option Navigate to the Arduino folder on the Desktop that we extracted now. Select “drivers” folder Click on “Ok” and then Click on “Next” Driver installation window will open Click on “Install” Drivers for the Arduino Uno board get installed. Close the window after the installation is complete.

	Close the device manager and the control panel The Arduino IDE is ready for use
	Let us now work with user programs. For this, copy or download the file Origin.tgz on to your computer. This file is available along with this Spoken Tutorial. These two are kept together in the Spoken Tutorial website, http://spoken-tutorial.org. Unzip this file. You will get a folder called Origin. I will keep it on the Desktop. We will now show how to conduct an experiment.
	The Origin folder has two subfolders, “tools” and “user-code” Open the user-code folder The user-code directory consists of folders for various experiments. Open the folder “led” It has two sub folders, “arduino” and “scilab”
	Open the “arduino” directory It has many folders, each for one LED experiment. Open the “led-blue” folder You will see the file with the name led-blue.ino This file contains the Arduino program to turn the blue LED on All Arduino programs have the extension ino. Right click on this file and open with Arduino IDE. It is also possible to open files directly from the Arduino IDE
Demo	Next, on the menu bar, click on the “tools” menu. You will see a ``Port” option. If the Arduino Uno board is not connected properly, you will not be able to click it.

	In that case, make sure that the USB cable is connected properly. For me, the board is connected properly. Hence, let me click it. I obtain a few options. Click on the COM port number corresponding to the connected Arduino We have now selected this COM port for communication with the Arduino Uno board. We also note the COM port number as 2 The COM port number information is required for use with Scilab. We will explain this in another tutorial.
Demo	As we have selected the port for communication, we can transfer the code to the board. Locate a button with a right arrow symbol on the Arduino IDE. If you hover the mouse over it, you will see that it is called Upload. Press this Upload button. This will compile and upload the program in the Arduino Uno board After the upload is complete, the blue LED on the shield will turn on. A picture of this is shown in the slide. Let us briefly explain what this code does. The code is written in a C like language Putting a high value on pin 9 turns blue LED on. Before that, we define pin 9 as the output pin. We have completed this experiment.
	Let us summarise. In this tutorial, we learnt to 1. Connect an Arduino Uno board to a computer 2. Identify the port number 3. Load the firmware on to the Arduino Uno board 4. Turn on the blue LED on the shield
	Let me give some assignments. Turn the green led on by putting 1 on pin 10

	Turn the red led on by putting 1 on pin 11
	We have a written a Scilab-Arduino control book It is published by Shroff Publishers, Mumbai An e-copy is available for free download from fossee.in Carry out the other LED lighting experiments explained in the book All the required code is available in the file Origin.tgz that you used in this tutorial.
	We have come to the end of this tutorial.
Show slide	This video summarises the Spoken Tutorial project. If you do not have good bandwidth, you can download and watch it
Show slide	We conduct workshops using **Spoken Tutorials.** Give certificates. Please contact us.
	Do you have questions in THIS **Spoken Tutorial?** Choose the minute and second where you have the question. Explain your question briefly. Someone from the **FOSSEE** team will answer them. Please visit this site.
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	The FOSSEE team helps migrate commercial simulator labs to DWSIM. We give honorarium and certificates for those who do this. For more details, please visit this site.
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	Thanks for joining. Goodbye.