# Getting Started
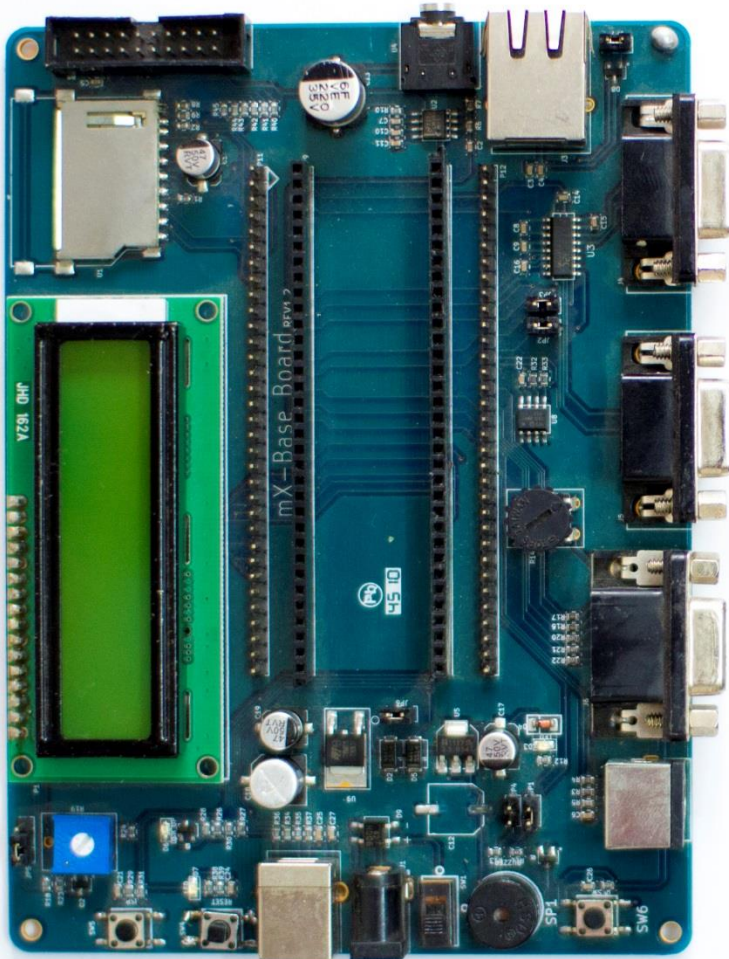
with

# mX-LPC1343 and mX-BaseBoard

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# Introduction

mX-BaseBoard is a new addition to the BlueBoard line from NGX Technologies. This board is intended to extend the functionality of the mX-LPC1343-S board. mx-LPC1343S along with pinout for LPC1343 includes a on board programmer/debugger which can be used with CoIDE. mX-BaseBoard can be used to extend the features of the stamp by providing connectors and interface to various peripherals of the stamp and provide power to the peripheral interface.

# Features

• 2x16 with contrast control & back light

• SD Card connector

• USB

• Power Jack

• Power Switch

• Reset Button

• ISP Button

• External interrupt Button

• Buzzer

• Audio Jack

• PS/2

• Serial Connector 0

• Preset for ADC

• On board EEPROM

# Things You Will Need



**mX Base Board**

**LPC1343**

# Mounting the mX-LPC1343 Board

The mX-LPC1343 board should be mounted on the mX-BaseBoard with a particular alignment The GND pin on mX-LPC1343 board should be aligned with the pin 1 of P9 female header on BaseBoard. Refer to the marking as shown in the image below.

**Improper mounting of the mX-LPC1343-S board on mX-BaseBoard may damage the mX-LPC1343 board and / the mX-BaseBoard.**



GND to P9
(Marked Arrow)
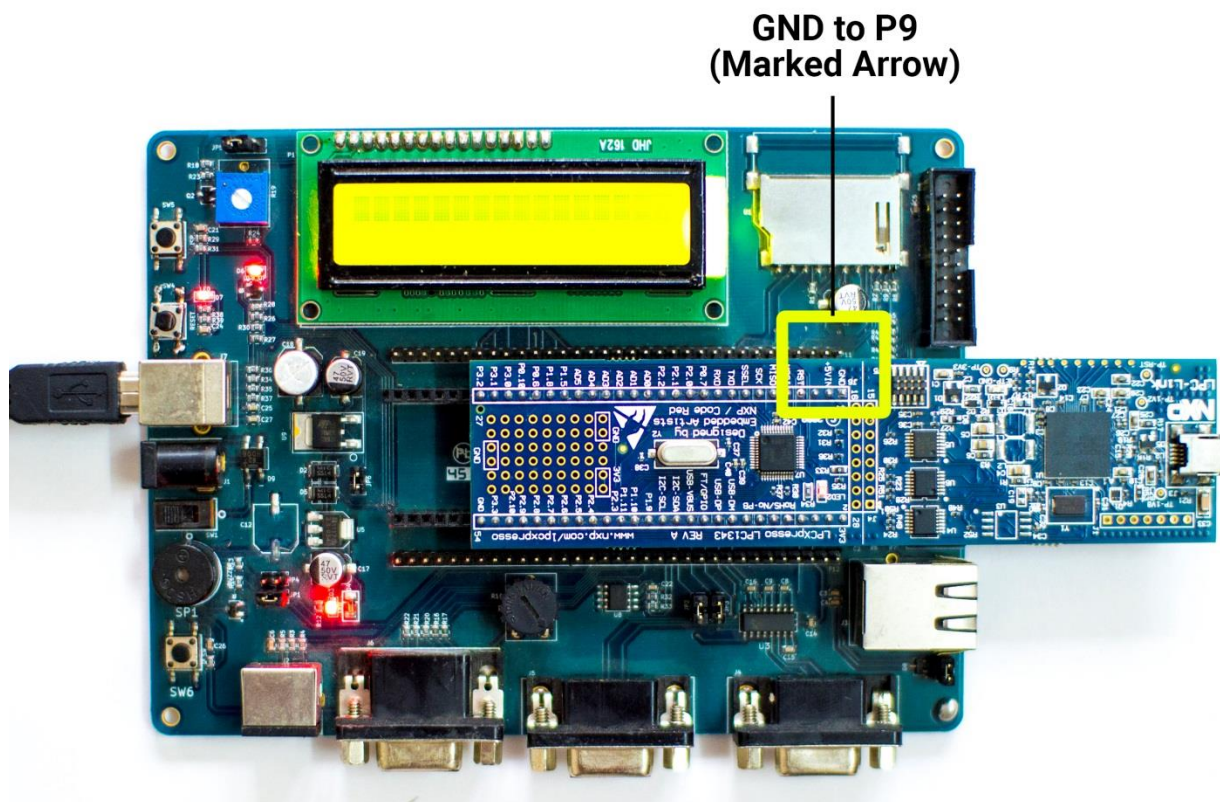
# Programming Your Board

To simplify the programming procedure, I have developed the **LPC Programmer** software which helps you to simply drag your drop binary program files (*.bin) and upload the code.

1. First, extract the **Programmer Tools.zip**. You will get two files: **LPC Programmer.exe** and a folder named **lpcrc**.
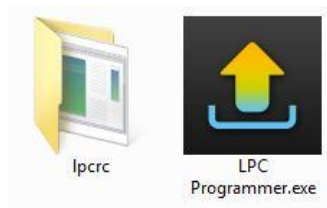


2. Copy the folder **lpcrc** to your **C: drive**. The location should be as follows **C:/lpcrc/lpcrc.exe**.

   *Note:* *lpcrc.exe is checksum correction tool and is safe to use (some Antivirus softwares may delete it).* ***You will not be able to upload your program without this tool.***

3. Right-click on the **LPC Programmer.exe** and *Send to Desktop (create a shortcut)* for ease of access. Open the LPC Programmer.
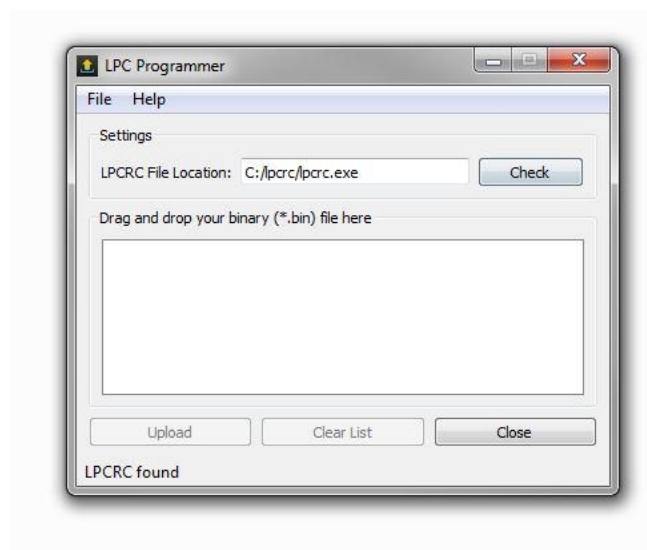
4. The LPCRC File Location must be the same where you had copied the lpcrc folder to, as in Step 2. Click the **Check** button to validate. If successful, the status bar will show the message **LPCRC found** as in the above image. Otherwise, follow Step 2.

5. Now open the folder Example Binary Programs and drag and drop **Blinky.bin** into the LPC Programmer.
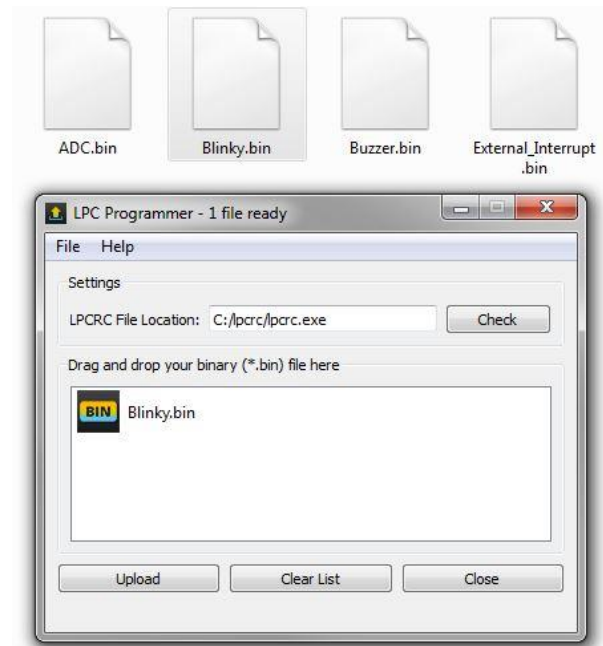


6. The mX-LPC1343-S board can be programmed using USB interface. Connect a USB cable from the baseboard (J7) to the PC. On the base board press and hold SW5, then press reset switch SW4. Release the reset switch SW4 and then release SW5.



USB Connector

Jumper JP1
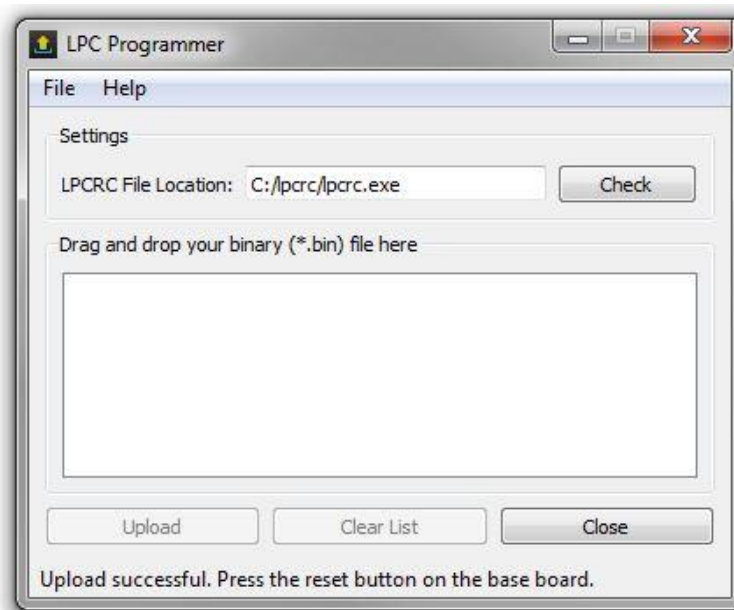(Buzzer)

SW5
(ISP)

SW4
(Reset)
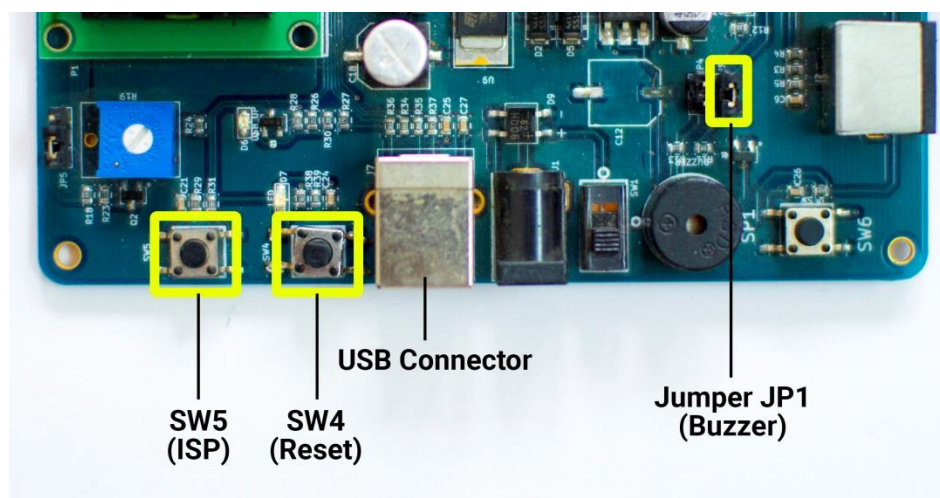
The device will be detected as an external storage device.



7. Once the device is detected, click the **Upload** button in the LPC Programmer. The status bar will show a success message.

8. Now press the **reset button (SW4)** on the Base Board. Your program should run as expected. To reprogram your LPC1343, repeat from Step 6.

   Connect a LED to Port 0, Pin 7 as shown below. This pin also connected to the built in LED on the LPC1343.

   *Note: When you disconnect and reconnect your USB cable, the program may not run sometimes. Just press the reset button again and the previously uploaded code will run on your Base Board.*
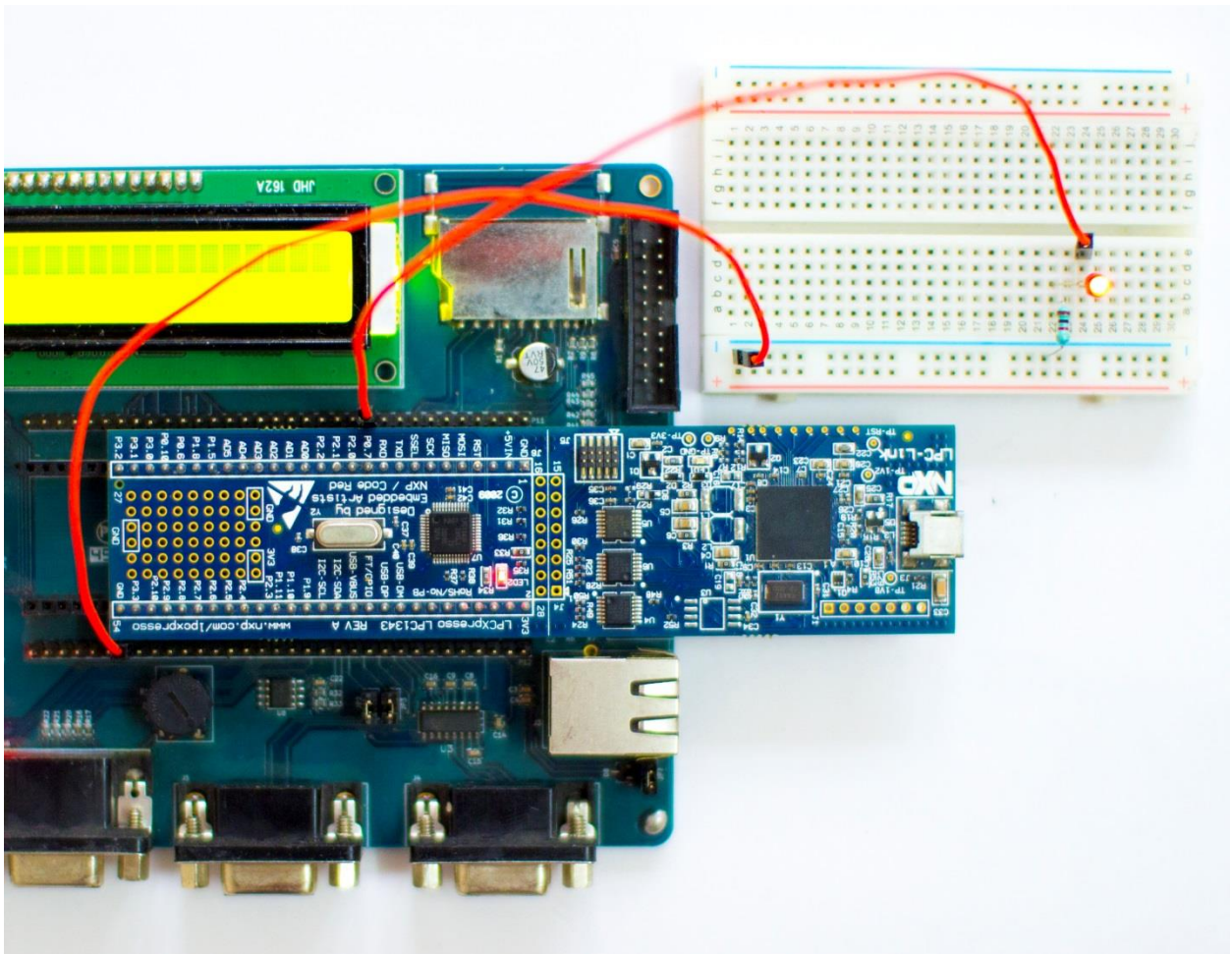


9. Upload the other example codes to test the Based Board. Connect Jumper JP1 as shown in Step 6 to make enable your buzzer.

# Testing Your Board

**Led Blink**
PORTS used → PORT0
PINS used → PIO0_7

**Buzzer**
PORTS used → PORT1 for BUZZER.
PINS used → PIO1_11.
A tone is heard from the buzzer. The jumper JP1 should be inserted.

**LCD**
PORTS used → PORT2 for Data lines and PORT3 for Control lines.
PINS used → PIO2_6, PIO2_7, PIO2_8 and PIO2_9 for Data lines and PIO3_0, PIO3_1 and PIO3_2 for Control lines

**External Interrupt (Button)**
PORTS used → PORT0 for EXT_SW.
PINS used → PIO0_7.
The BUZZER toggles between ON and OFF when the button SW6 is pressed.

**ADC**
PORTS used → PORT1 for ADC.
PINS used → PIO1_4.
Vary the pot R14 on the mX-BaseBoard. The change in value is displayed on the LCD.

**I2C**
PORTS used → PORT0 for I2C-SDA and I2C-SCL.
PINS used → PIO0_5 and PIO0_4.
A sample program to I2C is provided. The LCD should displays "I2C - PASS". Connected to the I2C lines is an EEPROM device. The program writes and reads back a piece of data to test.

**UART**
PORTS used → PORT1 for TXD and RXD.
PINS used → PIO1_7 and PIO1_6.
Connect the serial cable to J4 and PC serial port. Open a Terminal with 115200 baud, 8N1. The typed characters on the keyboard are echoed on the HyperTerminal.