Using Scratch with Arduino

Setting up the environment

1. Install required files

Download `Files.zip` from **INSERT LINK HERE**. Extract the zip file

2. Install Arduino Main software

Download and install Arduino IDE from the Arduino website. Make sure the IDE function correctly and try some simple examples before moving on. Otherwise, refer to Troubleshooting section on the website for more details.

3. Install S4A Firmware on your Arduino

Open the `firmware.ino` inside `Files.zip` and open this file with Arduino IDE (downloaded in step 2). Connect Arduino to your computer, select the version of Arduino board [eg: Arduino Uno - this should be written on your board] (`Tools/Board/*Arduino Board Type`), select the USB port of your Arduino board from the tool menu (`Tools/Port/*Arduino USB Port`). Upload the file to your Arduino. The LED lights on your Arduino should be blinking rapidly after the program is loaded into your Arduino.

4.Start up S4A

Open S4A.exe inside `Files/S4A2/S4A.exe` or an alias created when you install the program (just click on the icon). You can now use custom Scratch blocks to control your Arduino board using S4A.

Notes

S4A is a modified version of **Scratch 1.4** - `.sb` , it has backward

compatibility but will not open *Scratch 2* files.

PicoBoard will also work with S4A environment.

Digital port 13 is defaulted to internal LED light in most Arduino boards but we are using this port for motors.

Troubleshoot

Finding Port of Arduino

- Open Control Panel
- Click on `Systems and Security`
- Click on `System`
- Click on `Device Manager` (top left)
- Look in `Ports`
- Check what port Arduino is on (eg: COM4)

There is no driver installed on your system

If this error show whenever you open S4A.exe, ignore it, it should not interfere with the Arduino nor the program or OS. Full error:

```
There is no driver installed on your system
Failed to open MIDI output device Microsoft MIDI Mapper
```

Looking for board

There is a dialogue box on the stage area(where it shows value of analog ports…). S4A.exe is finding the Arduino board. Only plug 1 board in at a time. S4A.exe should discover the board after a while with correct ports and version ready to use. **If this problem prolonged**, Reset the Arduino board and reinstall the `firmware.ino` file (installation step 3).
