NANOFLO

User Manual

3.0

Contents

Nanoflo is a platform that allows you to create Arduino projects with flowcharts. You can create, simulate, emulate and download your projects with ease.
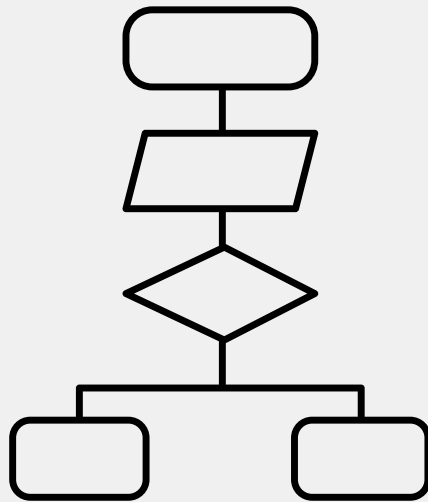
Welcome to Nanoflo! This guide provides a step-by-step introduction to the platform's core features, empowering you to visualize and control Arduino devices with ease. Whether you're an educator, student, or hobbyist, Nanoflo's user-friendly interface eliminates the need for extensive coding, enabling you to focus on creativity and innovation.

Downloading and Installing Nanoflo

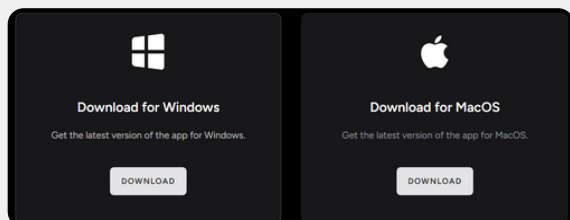**Steps for Downloading and Installing Nanoflo**

Go to https://nanoflo.com.au

On the Nanoflo homepage, locate the download section.

Choose the appropriate version for your operating system:
   Windows Users: Click "Download for Windows."
   Mac Users: Click "Download for Mac."

Note: *Nanoflo is a startup company, and the software is new. You may receive a security warning when downloading the installer, indicating that the file isn't commonly downloaded. If you trust the source, select 'Report this file as safe' and then click 'Keep' to proceed.*

Once the download is complete, find the installer file in your "Downloads" folder or designated location.

Double-click the installer to start the installation.

Follow the on-screen instructions to complete the installation.

Note for Windows users: *During installation, you may see a Windows SmartScreen warning as the software is from a new developer. Click 'More info' and then 'Run anyway' to proceed.*
Note for Mac users: *You may see a warning about Nanoflo being from an untrusted developer. To proceed, go to 'System Preferences' > 'Security & Privacy' and click 'Open Anyway.'*

After installation, open Nanoflo from your applications folder or start menu.

Enter the login credentials you created at registration, or provided by your organisation to access the software.

If you encounter any issues during download or installation, contact Nanoflo Support at support@nanoflo.com.au.

Note: *Once Nanoflo has been installed, automatic updates will occur when a new version is released. A pop-up will appear in the app when logged in, and the update will take place when you quit the app.*
Note for Mac users: *The app must be closed for the update to occur. This can be done by right-clicking the app in the tray and selecting 'Quit' or pressing Command-Q while in the app.*
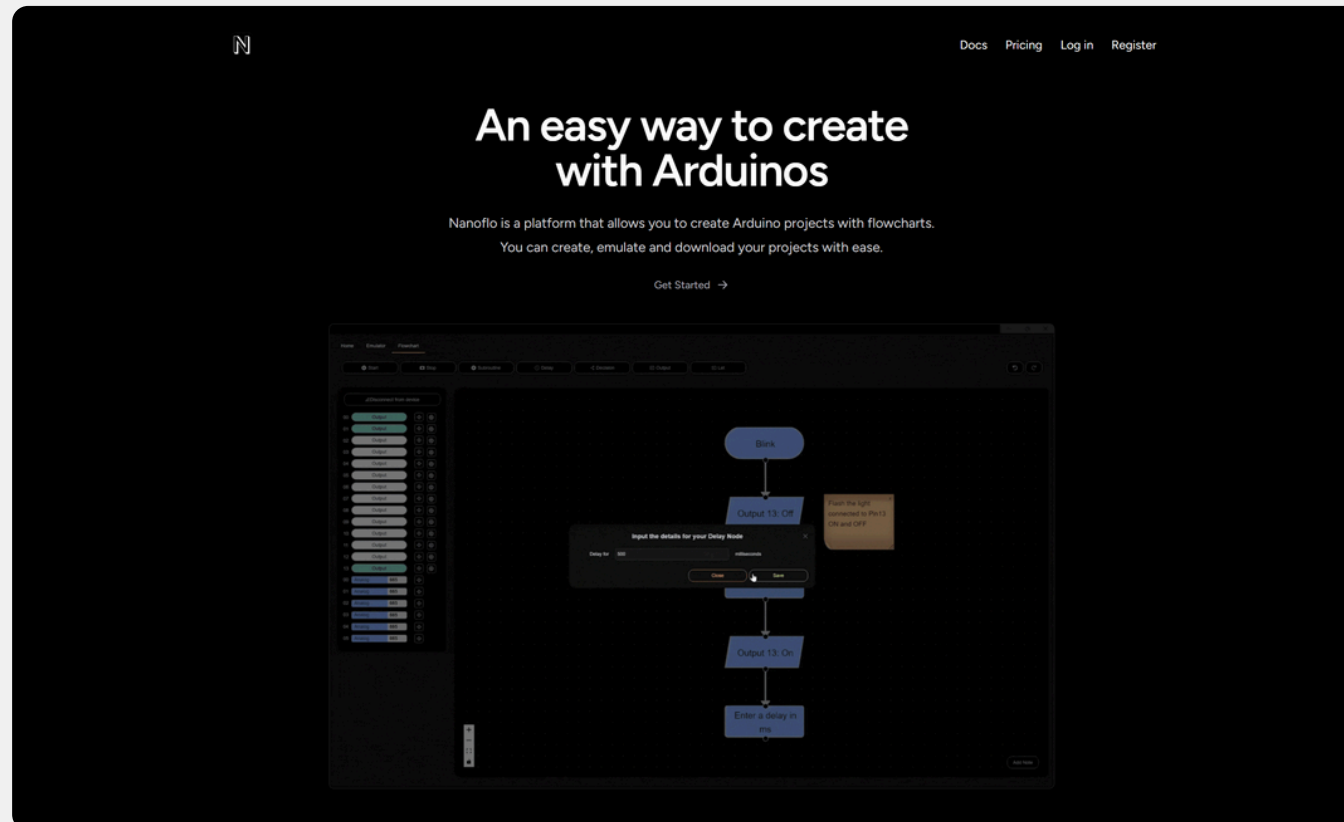
Subscription Portal

To access the subscription portal, you will first need to register for an account. This can be done by clicking either the "Get Started" link or the "Register" button at the top of the webpage.

*Note: This **only** be completed by the individual who will manage the subscription and attached seats.*

Register An Admin User

Fill out the fields to register the **Owner** account from here you will be required to verify your email before continuing to purchase a subscription.

Purchasing A Subscription

Once registered, you will land on the user Dashboard. From there, you will be required to choose a plan. Clicking the "Choose Your Plan" button will take you to the Pricing Plans page, where you can adjust the slider or manually enter the number of users (seats) you require. This will display both the individual cost and the total cost per year. After inputting the required number of seats, click the "Subscribe" button to proceed to payment.

Purchasing A Subscription

You will be redirected to a Stripe-handled payment portal, where you can securely fill in your payment details. The portal also includes a detailed breakdown of the pricing for your chosen plan.

Dashboard

Your Plan: This section allows the account Owner to see the yearly cost and number of purchased seats. It also enables the owner to manage the subscription, add seats, and adjust available seats.

Open Customer Portal: The owner can manage payment details, cancel the subscription, and access invoices.

Add Seats: This option allows the owner to add more seats to the subscription seamlessly. The cost of these additional seats will be added to the subscription and charged immediately pro-rated for the remainder of the subscription period.

Manage Seats: Navigate to the Users tab to add or remove users to the available seats. This can be done individually or through a bulk upload using a CSV file (more details to follow).

Managing Seats

The Users window allows Admin users and Owners to add members to the available seats. This can be done individually or via CSV bulk upload. You can also edit individual or groups of users using the CSV method to change their details, password or tags.
The tag system is a quick and convenient way to group, filtered search and bulk delete your users.

Adding An Individual User

The **Add User** Button will open a Create User window. Here you will insert the users name and email address. You will then assign the appropriate role to that user.

Admins can add/remove users, manage passwords and tags.

Members will not have access to the portal or dashboard, they will be managed by the **Owner** or **Admin** users (they will be able to reset their own password).

Password: You can set a password for the user you are creating or leave this blank. Leaving the field blank will provide the user with a random password they will have to reset when they first log in. You also have the option of setting a default password in the **Settings** tab. Once set the default password will be applied to all users where this field has been left blank.

Tags: Tags are used to group users to make filtered searching, editing and bulk deleting more convenient. (eg. YearLevel, SubjectCode, Team etc.)

Bulk Upload Users

The **Upload CSV** Button will open a Create User window. Here you will insert a csv using the example format or provided CSV file. You will then assign the appropriate role to that user.

Password: You can set a password for this group of users you are creating or leave this blank. Leaving the field blank will provide the users with a random password they will have to reset when they first log in. You also have the option of setting a default password in the **Settings** tab. Once set the default password will be applied to all users where this field has been left blank.

Tags: Tags are used to group users to make filtered searching, editing and bulk deleting more convenient. (eg. YearLevel, SubjectCode, Team etc.)

Uploading a CSV file with existing members in it will add any new tags to those members, but will not create a duplicate user.

App Overview - Select a Device

Pick a device ✕

Choose the type of device you are connecting to

Arduino Uno ⬍

Select a COM Port *

COM Port ⬍

Choose a Baud Rate

9600 ⬍

Choose the number of Data Bits

8 ⬍

Choose the number of Stop Bits

1 ⬍

Choose the Parity

None ⬍

Close   OK

Choose the Type of Device:
Dropdown menu to select the type of Arduino device (e.g., Arduino Uno, Nano, Mega).
Select a COM Port:
Dropdown for choosing the appropriate COM port to connect to the selected device.
Choose a Baud Rate:
Pre-filled with a default value (e.g., 9600).
Allows adjusting the communication speed between the software and the device.
Choose the Number of Data Bits:
Dropdown to specify the data bit length (e.g., 8 bits, commonly used in most serial communications).
Choose the Number of Stop Bits:
Dropdown to set the stop bit value (e.g., 1 stop bit, ensuring proper communication framing).
Choose the Parity:
Dropdown to select the parity option (e.g., None, Even, Odd) for error-checking configurations.
Close Button:
Closes the dialog without saving changes.
OK Button:
Saves the selected configurations and proceeds with the connection.

Note: It is important that the correct device type and COM Port have been selected to ensure successful connection and download to the device.

App Overview - Home

Take Screenshot: This button will generate a screenshot of the flowcharts on the canvas.

Save: This button will allow you to save the current flowchart including the custom emulator names.

Load: This button will allow you to load saved flowcharts.

Zoom Canvas: The + & - function will allow you to zoom the canvas in and out.

Fit View: This button will center zoom on your current flowcharts within the canvas.

Clear Flowcharts: This will clear the nodes and edges from the canvas.

Home   Emulator   Flowchart

Go to the Emulator Menu to pick a device

Add Note

App Overview - Emulator

Stop: Emulating or Simulating the flowchart in the canvas.

Playback Speed: Adjust the speed whilst emulating or simulating.

Download to Device: This button will download the flowchart to the microcontroller.

Variables: Opens the variable modal window which displays variables in table and graph form.

Play & Pause: Emulate or Simulate the flowchart in the canvas.

Select Device: This button open the device selection modal window.

Connect to Device: Connects the live emulator to the selected device.

Simulate Device: Allows interaction with the emulator inputs to test playing flowcharts without a device connected.

Settings: Change the I/O type.

Rename: I/O pins can be custom names.

Add Note: Add a note to your flowchart.

App Overview - Flowchart

Node Toolbox (Top of the Flowchart Tab):
Contains drag-and-drop nodes for flowchart programming, including:
Start: Marks the beginning of the flowchart.
Stop: Ends the flowchart process.
Subroutine: Adds reusable logic segments.
Delay: Introduces a timed pause in execution.
Decision: Implements conditional logic (e.g., if/else statements).
Output: Sends output to the connected device or emulator.
Let: Assigns values to variables.

Device Controls (Left Sidebar):
Connect to Device: Establishes a live connection with an external device.
Simulate Device: Allows testing flowcharts without a physical connection.
Pin List: Displays a list of available I/O pins (e.g., Output, Analog).
Each pin has options to configure, rename, or set functionality.

Canvas Workspace:
Large central area for designing flowcharts using drag-and-drop nodes.
Includes a grid for aligning nodes and maintaining a structured layout.

Add Note (Bottom Right):
Button for adding notes to the flowchart, useful for annotations or documentation.

Features

The settings button next to each I/O pin will allow you to change its type: Input, Output, Servo and PWM.

The rename button next to the I/O pins allows you the personalise the name of each I/O.

Simulation mode allows you to test the flowchart code without needing a physical device. While playing, users can interact with the inputs
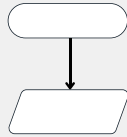
Dropping the next node directly below the previous node will automatically add an connection between the nodes.

The Variables button opens a modal window with a table of defined variables. The button at the top left will allow toggle between table and graph.

The screenshot function will grab a screenshot of the entire flowchart and opens a save window for the file.
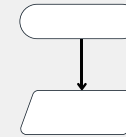
When selecting a node it will highlight with a red border. Once selected, selecting the next node will create a connection.

The speed slider in the 'Emulate' tab allows playback speed adjustment during emulation or simulation.
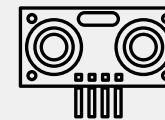
HC-SR04 Ultrasonic Sensor support.

HC-SR04 Ultrasonic Sensor

To add a HC-SR04 Ultrasonic Sensor to your project, you will first need to set a digital pin to Input. This will correspond to the Echo pin on your sensor.

Once you have allocated this pin, navigate to the Emulator tab and open the Peripherals Modal by clicking the Peripherals button at the top right of the window.
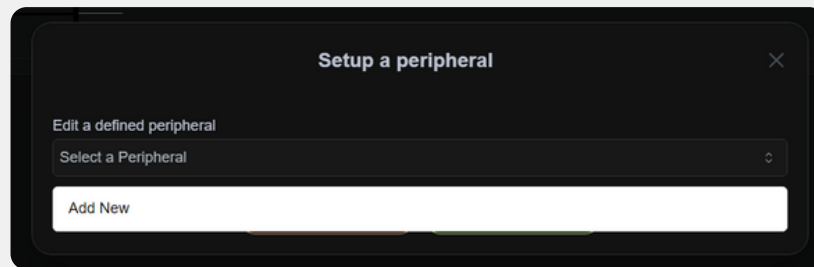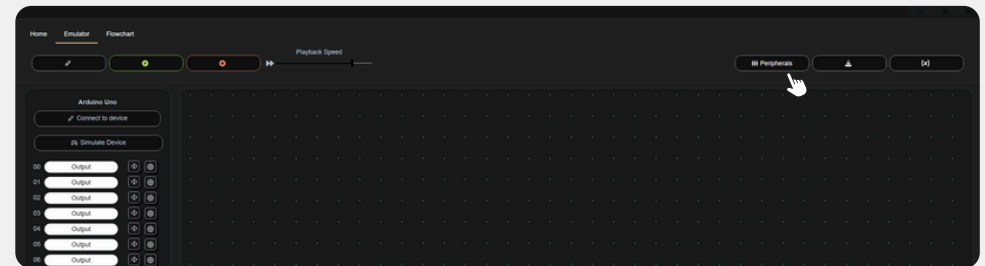
When the modal opens click the drop box "Select a Peripheral" to add a new Peripheral or edit a previously defined Peripheral.

Select **HC-SR04** from the drop box.
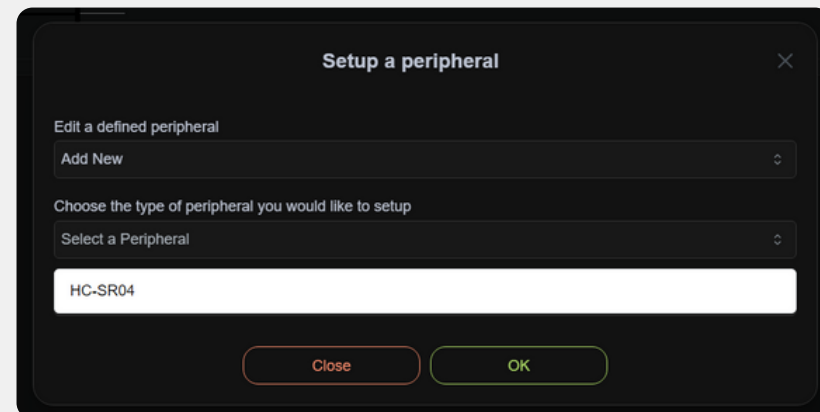
HC-SR04 Ultrasonic Sensor

Setup a peripheral ✕

Edit a defined peripheral

Add New ⇕

Choose the type of peripheral you would like to setup

HC-SR04 ⇕

Ultrasonic 1

Echo

Input 2 ⇕

Trigger

Output 3 ⇕

Close   OK

Fill in the input fields:
 Name the Peripheral.
 Define the Echo Pin from the drop box.
 Define the Trigger Pin from the drop box.

Arduino Uno

🖧 Connect to device

🎮 Simulate Device

00	Output	⬌ ⚙
01	Output	⬌ ⚙
02	Ultrasonic 1 0	⬌ ⚙
03	Ultrasonic 1	⬌ ⚙
04	Output	⬌ ⚙
05	Output	⬌ ⚙
06	Output	⬌ ⚙
07	Output	⬌ ⚙
08	Output	⬌ ⚙
09	Output	⬌ ⚙
10	Output	⬌ ⚙
11	Output	⬌ ⚙
12	Output	⬌ ⚙
13	Output	⬌ ⚙
00	Analog	⬌
01	Analog	⬌
02	Analog	⬌
03	Analog	⬌
04	Analog	⬌
05	Analog	⬌

The defined Ultrasonic Sensor will now appear in the emulator.

When connected the Echo Slider and Value will correspond with the reading from the Ultrasonic Sensor.

When Simulating, the User can interact with the Slider to change it's values.

Troubleshooting

Error Observed	Possible Cause	Possible Solution
Fetch Failed	Auth. Domains not Whitelisted	Nanoflo makes three types of secure HTTPS requests (port 443) to external services: **nanoflo.com.au** – This subdomain handles user authentication and license verification. **o4507769720799232.ingest.de.sentry.io** – This subdomain of sentry.io manages crash reports. It sends the application state at the time of a crash, enabling us to analyse root causes. Crash report events are sent to these addresses:34.120.62.213/32130.211.36.74/3235.186.247.156/32 For further details, including our EU data location, refer to Sentry's Security Documentation. **nanoflo-releases.s3.ap-southeast-2.amazonaws.com** – This AWS S3 subdomain supports our auto-update feature. Nanoflo will check AWS for new versions on startup, automatically downloading updates to your device. Note: Apart from these updates, all other functionality remains local to your device. The primary function of Nanoflo continues to be interfacing with Arduino devices via USB/serial port to assist students with flowcharting, programming, and digital emulation.
Resource temporarily unavailable - please check no other applications are using the COM port	Port in use / blocked by another application.	Please check that there are no other applications that may be using the serial ports. Eg. The open source slicing application Cura, by Ultimaker, has been known to hijack/block serial ports if the application is running and a device is connected.

Troubleshooting

Error Observed	Possible Cause	Possible Solution
Error connecting to device - please check you are using the correct bootloader and device type	CH340 Drivers	If the microcontroller you are using has a CH340 USB to Serial Port Chip. Please make sure you have downloaded and installed the correct CH340 Drivers for your Operating System. Recommended Driver: https://learn.sparkfun.com/tutorials/how-to-install-ch340-drivers/all
	Microcontroller uses Arduino Cli - Old Bootloader	Please test the Old Bootloader option in the device type Modal. Note: These are typically found on non-genuine Arduino devices.
	Microntroller does not have a bootloader	Please check if you can upload to the device with the Arduino IDE. Please check the ATmega MCU to see if it is the type that requires flashing. Note: This can occur on non-genuine devices.
	Missing Cli or Header Files	Please check that the following folders exist in: **Windows:** C:\Users\<UserName>\AppData\Roaming\Nanoflo\libraries C:\Users\<UserName>\AppData\Roaming\Nanoflo\packages\arduino\hardware **Mac:** ~\Library\ApplicationSupport\Nanoflo\libraries ~\Library\ApplicationSupport\Nanoflo\libraries\packages\arduino\hardware

Thankyou