

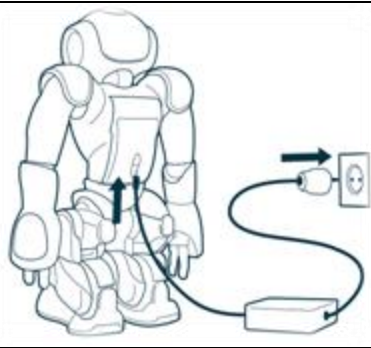
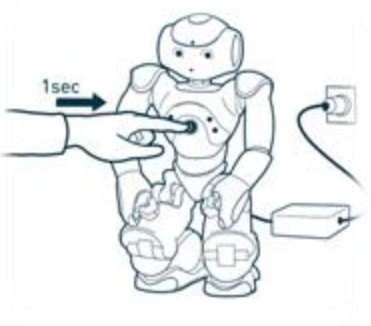


NAO Cadet

Nao Cadet is a new application developed by SLQ to make programming a NAO robot more accessible. It does this by allowing use of colourful block-based coding similar to Scratch, instead of the Choreograph software which comes with the NAO.

NAO Cadet allows NAO programming from any device that has an internet browser (including iPads/tablets) as well as allowing multiple devices to be coding at once. You create a program by simply dropping blocks representing different functions into a string, the run your program to see the results on the NAO robot in real-time.

Getting set up

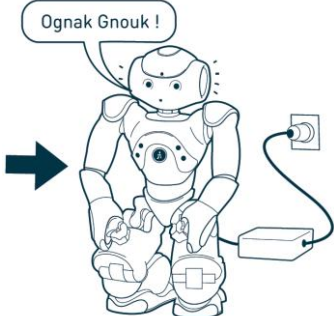
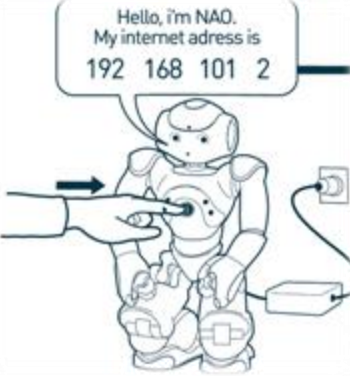


<p>1. Gently remove the NAO from the case, along with its charger. Connect charger as shown and switch on. Light on charger will turn red during charge cycle. When light turns green, NAO is charged. (Wait until battery is fully charged before proceeding)</p>	
<p>2. You will need a Wi-Fi network on which to connect the NAO to the tablet, which is provided by the included Wi-Fi router.</p> <p>Remove Wi-Fi router from case and connect to mains power. The router's network name is _____ and its password is _____.</p>	<div style="border: 1px solid black; padding: 5px;"> <p>Wi-Fi network: Naowifi4 p/w: naowifi4 NAO's admin IP: 192.168.0.202 Goes with Monty (red)</p> </div>
<p>3. Once NAO is fully charged, power it on by pressing it's chest button for about 1 second, until the button, and its eyes and ears light up white.</p>	

Need further information?

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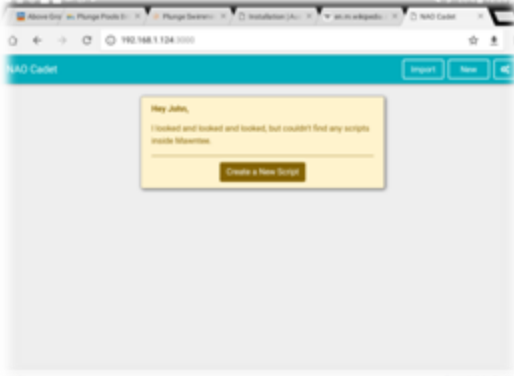
<p>4. Once powered on, NAO will need to boot up, which can take around 3-5 mins. Once booted, it will say a couple of words which sound like 'Ognak gnouk' and should then stand up.</p> <p>Whilst the NAO is booting, download and install the "NAO Cadet" app from the Google play or Apple App stores.</p>	
<p>5. The NAO should automatically find the Wi-Fi network which is being output by the router, so it's important to have this up and running as per step 2 above.</p> <p>Press the NAO's chest button and it should read out an IP address. If it does this, then it has successfully found the Wi-Fi network. <i>(an IP address is a series of numbers separated by dots eg. 192.168.1.123)</i></p>	
<p>6. At this point you may launch the NAO Cadet Software. The software is stored on the robot itself, so to launch it you just need to say the verbal command 'Cadet' to the robot.</p> <p>Position yourself right in front of the NAO's face. It senses movement so should sense your presence, and go into 'listen' mode, indicated by blue spinning eye lights.</p> <p>Say 'Cadet'. Its eyes should turn green to indicate that it has heard you and is processing the instruction. <i>(Please note, it may take a few attempts for the NAO to recognise the word and you may need to try a few different voice tones)</i></p>	 <p>NAO's eyes will revolve blue when in 'listening' mode.</p>
<p>7. Once NAO has registered the 'Cadet' command, the program will launch. The NAO will give its name, say 'Let's play NAO Cadet', and read out an IP address.</p>	

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<p>8. Grab a tablet and connect its Wi-Fi to the network named in step 2 above.</p>	
<p>9. You can use NAO Cadet 2 ways, either by opening the app, or via a web browser. To use the app, simply tap the icon to open. Assuming that your device is connected to the same Wi-fi network as the NAO, and that you have launched the Cadet program as per steps 6 & 7 above, the app should simply find you NAO in the network and display a button to tap. Tap this button to proceed.</p> <p>To use via a browser, open the web browser on your tablet and enter the IP address given by the robot. It's important to note that you must enter the address just as the robot says, including :3000 at the end. For example 192.168.1.123:3000</p> <p>If you need the robot to repeat the IP address, just short press it's chest button again.</p>	 
<p>10. Either of these methods will open a screen which invites you to enter your name. Once entered, tap OK.</p>	
<p>11. If you are logging in to NAO Cadet for the first time, you will get a message saying that Cadet has searched for any existing programs (scripts) created by you, but hasn't found any. The app then invites you to 'Create a new script'. Tap this button.</p>	

Need further information?

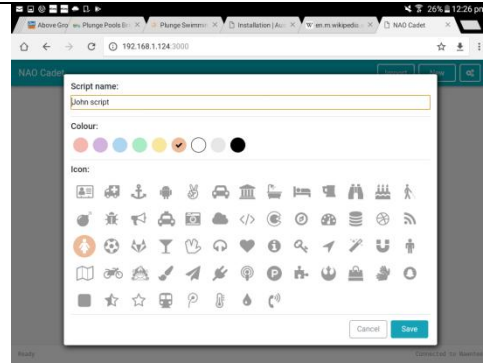
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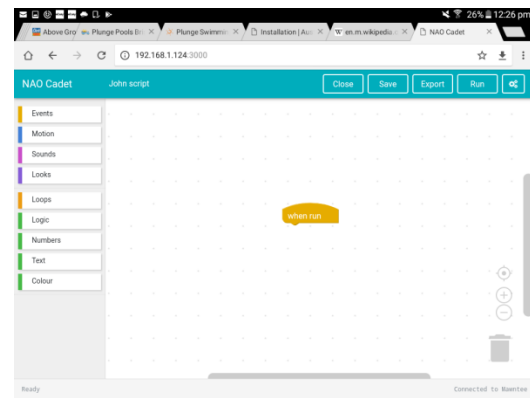
12. You can give your new script any name you like, but the default is **(your name's) script**. You can leave this or over-type it with a name of your choice.

You can also select an icon to represent your script. When you have completed these steps tap **'save'**.



13. This opens NAO Cadet in the programming window at the first stage of your script.

You will notice a blue menu bar at the top of the screen, option blocks down the left hand side, and the main white programming area, with a single block in place which says **'when run'**. This block is required as the first step of any script and will always appear automatically when you start a new script.



And now you are ready to start your first script!

NAO gives you several options to present your stories in engaging ways, which be accessed via various easy methods of block programming. All commands are programmed by simply dragging a 'block' from a category heading on the left hand side of the screen, into the main white programming area. ***Please note all blocks are coloured coded by category.***

Some of the basic block categories are
(Please note: block category colours may differ between app versions):

Events: an event block lets you program a response to a physical interaction with the robot (ie. An event) eg. A press of its hand or foot sensor.



Motion: lets you program the NAO to make physical movements, such as walking, turning left or right, sitting down or standing up.

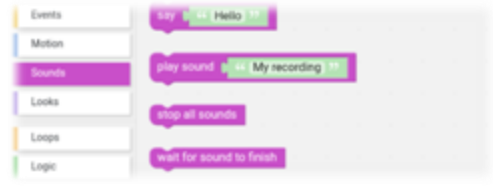



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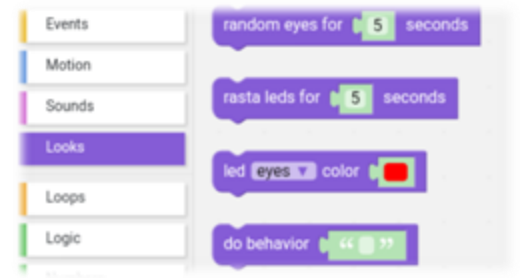

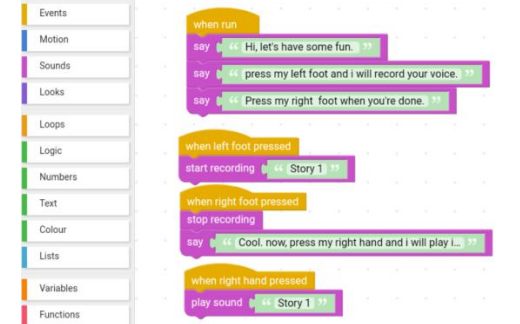
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<p>Sounds: lets you enter text that the robot will speak, sets its volume and enables audio recording of external sound via its in-built microphone.</p>	
<p>Looks: lets you set the NAO's eye colour and enable video recording via its built in camera.</p>	

Below are some suggested ways in which you could use NAO to create a memorable experience. Try them out, experiment and practice. Feel free to use any combination of them and to explore further as you get comfortable with the platform.

<p>You could use 'say' blocks to have the robot introduce itself, then tell a story in its own voice, by entering the text of a story into another 'say' block. Speech will be accompanied by pre-programmed movements automatically to make the story-telling more expressive and entertaining.</p> <p><i>(hint: place each new sentence in a new block to improve the pacing of the reading).</i></p>	
<p>You could add some additional movements at the beginning of the reading to make more impact, eg. Combine 'motion' and 'say' blocks to have the robot walk on, sit down and then read the story.</p>	
<p>You could use audio recording options, found under the 'sounds' blocks to record voices and/or music to add to your presentation. Add to the interactivity by having the robot invite you to press its hand or foot to start and stop recording.</p>	

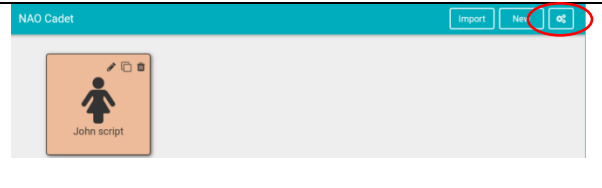
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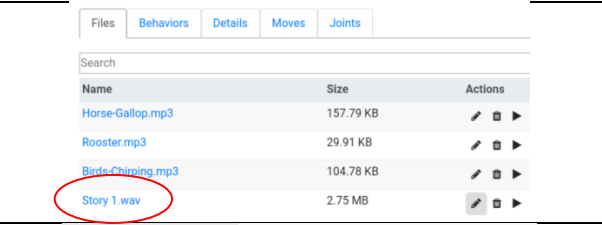


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At any time, you can view all audio files you have recorded to the NAO via this method, by saving your current script and returning to the home screen. Here, tap the settings (gears) button.



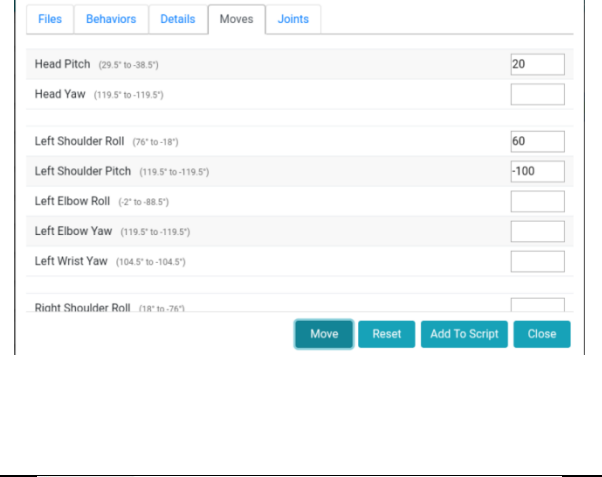
Under the files tab you can see all audio files saved on the NAO, including your recorded files.



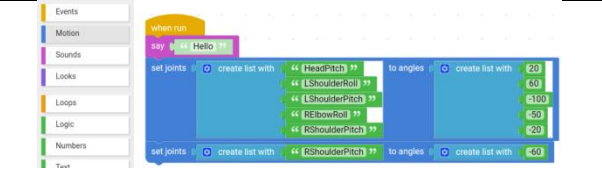
You can use any of these audio files in a new script by using the appropriate file name in a 'say' command.



You can experiment with creating original movements and adding them to your script for greater effect. From the home screen tap the 'gears' button and this time select the 'moves' tab. This is where you can select the degrees of movement for the joints controlling the NAO's head, shoulders, elbows and wrists. Experiment with different numbers within the ranges indicated to create new movements. Once you are happy with a movement combination, you can add it to a new script by tapping 'Add to script'.



Once added to your script, it will appear in a block command similar to this.



Additional resources

- **NAO User Guide** (abridged PDF version on kit USB)
<http://doc.aldebaran.com/2-1/nao/index.html>
- **NAO safety Guide** (PDF version on kit USB)
http://doc.aldebaran.com/2-1/downloads/nao_safetyguide_2014_en_fr_sp_pt_gr_it_nl.pdf
- **NAO Hello Guide** (PDF version on kit USB)
http://doc.aldebaran.com/2-1/downloads/nao_hello-guide.pdf
- **An introduction to robotics with NAO** (PDF version on kit USB)
http://www.robotlab.com/hubfs/PDFs/RobotLAB/RobotLAB_NAO_CS_Curriculum_TOC.pdf?t=1492815545722

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