

The Wonderful World Of NXT

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SUCS Lightning Talks

What is NXT?

- ▶ Lego's next generation robotics kits in the Mindstorms series
- ▶ Based around the NXT brick computer
- ▶ 32-bit ARM7 microcontroller, 64KB main memory, 256KB secondary storage
- ▶ Bluetooth enabled
- ▶ Firmware has been open sourced by Lego

I/O?



Programming?

The screenshot displays the LEGO Mindstorms software interface. The main workspace is a grid where a sequence of programming blocks is arranged horizontally. From left to right, the blocks include: a green gear block labeled 'B', an orange block with a robot head icon labeled '3', a green block with a speaker icon, a green gear block labeled 'A', another green gear block labeled 'B', a green gear block labeled 'A', a green gear block labeled 'B', and finally a block with a robot head icon. Below this sequence, there are three more blocks: a green block with a speaker icon, a grey block with a screen icon, and an orange block with a screen icon. A toolbar on the left contains various icons for gears, a speaker, a screen, a robot head, and other functions. The top menu bar includes 'File', 'Edit', 'Tools', and 'Help'. The right sidebar is titled 'Robo Center' and features four categories: 'Vehicles' (with a sub-item 'Quickstart'), 'Machines', 'Animals', and 'Humanoids', each accompanied by a corresponding image. At the bottom of the sidebar, there is a 'Need help?' section with a question mark icon and a link to 'More help >'. The bottom of the screen shows a navigation bar with several icons for navigating between slides.

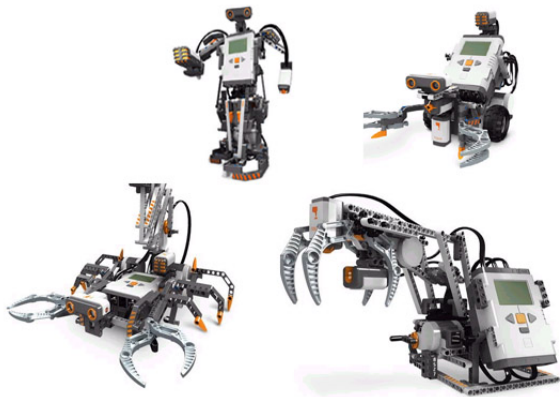
Ports?

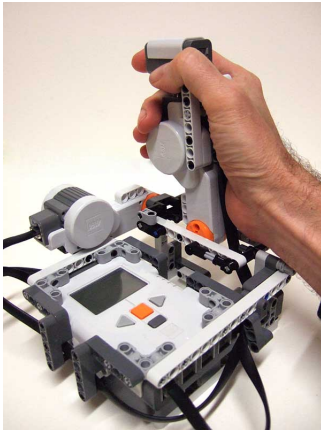
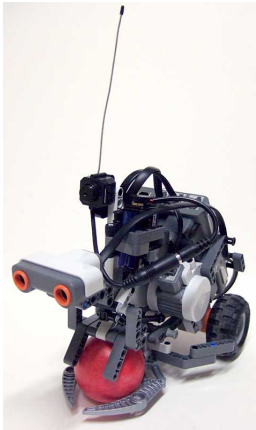
Here are just a few of the languages for which an NXT port exists:

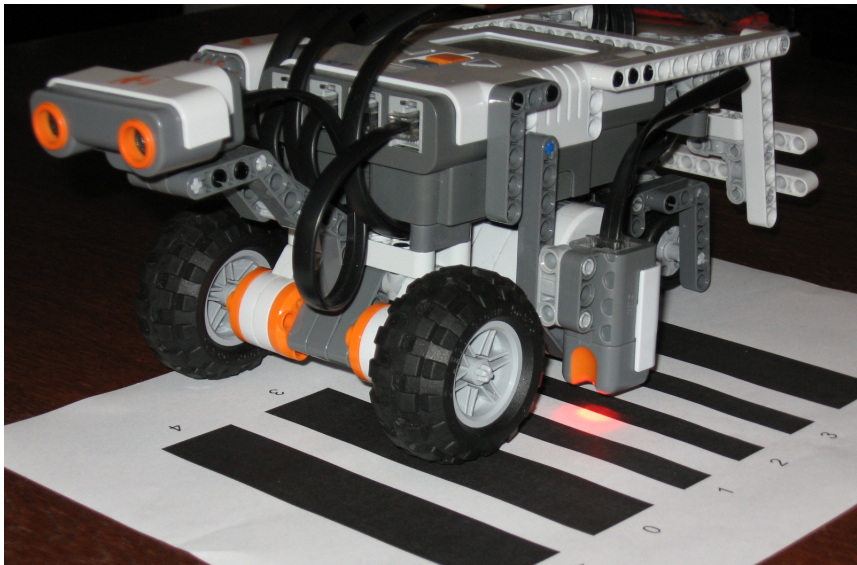
- ▶ Java
- ▶ NQC (Not Quite C)
- ▶ C#
- ▶ Lisp
- ▶ ASM
- ▶ Prolog
- ▶ Logo

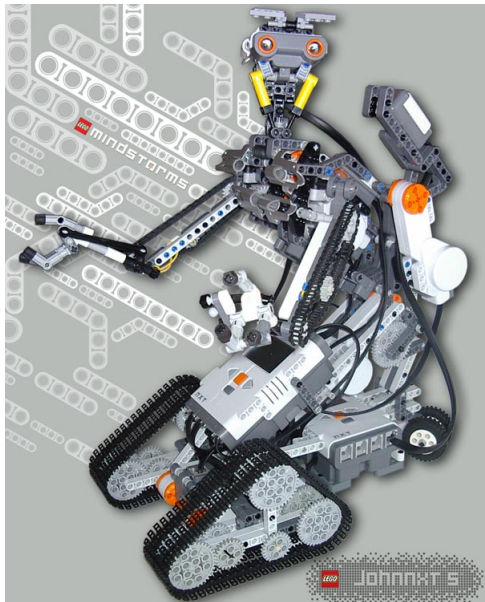
What can it do?

Anything your devious mind can come up with!









Other ideas...

- ▶ Racing car controlled via Bluetooth-enabled mobile phone or Nintendo Wiimote
- ▶ Stair-climber
- ▶ Self-balancing robot
- ▶ Maze solver
- ▶ Radar
- ▶ Dancer
- ▶ Cuckoo clock

The Future?

- ▶ Since Lego open-sourced the NXT firmware, an official NXT SDK has been released
- ▶ This has resulted in a vibrant community of developers and enthusiasts
- ▶ The release of a Bluetooth SDK for NXT has paved the way for integration with other devices
- ▶ There are several communities of NXT enthusiasts, the most notable being NXTasy.org
- ▶ Users publish instructions for their own custom robot designs
- ▶ Custom program blocks (i.e. floating point arithmetic etc) are released regularly and often
- ▶ Third party manufacturers have released their own sensors i.e. cameras, gyros, infra-red

Questions?