



# LEGO Robotics Curriculum Development

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## Goal:

To develop a 2-5 day curriculum which introduces students from grade 5-10 to programming using the LEGO Mindstorms education kit.

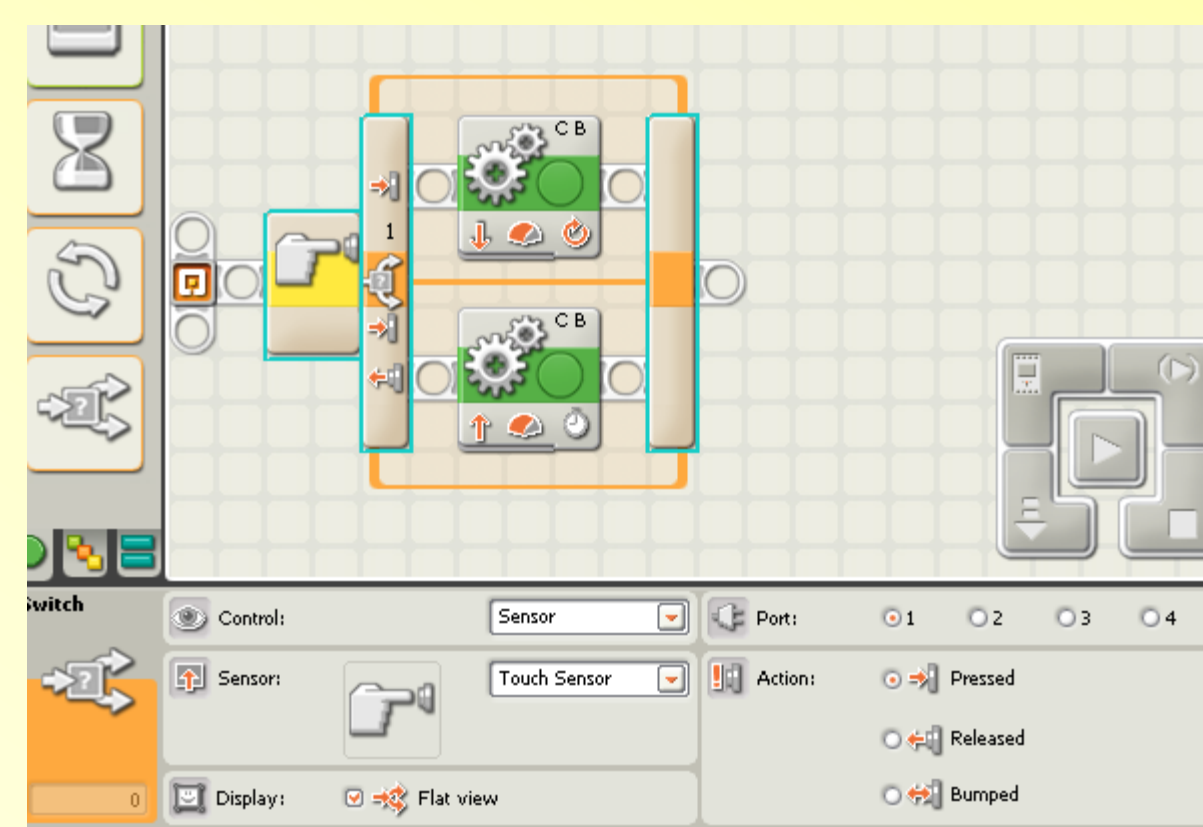
## The Programming Interface:

The Mindstorms programming interface is very graphical. This is an easy and intuitive way to learn basic programming concepts.

## Key Concepts

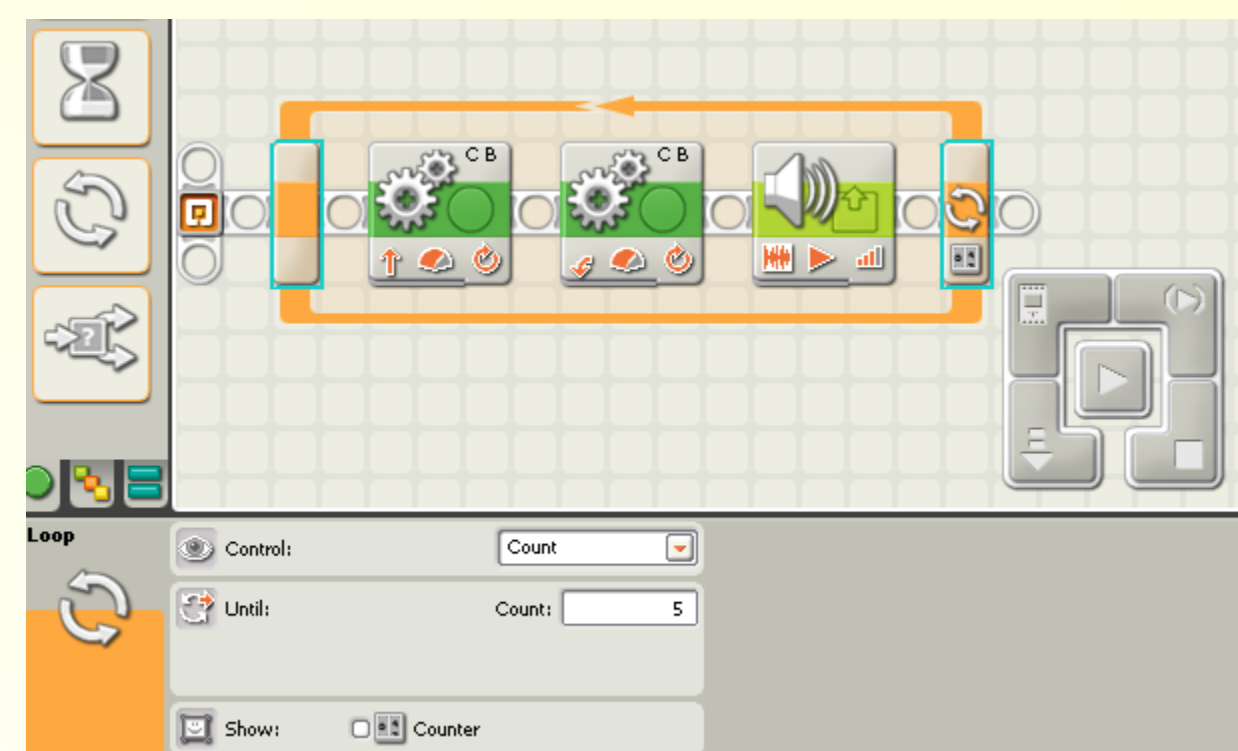
- Loops
- Variables
- If statements
- Debugging
- Building
- Adding to existing code
- Commenting code
- Timing
- Math
- Problem solving
- Planning
- Teamwork

## If Statement



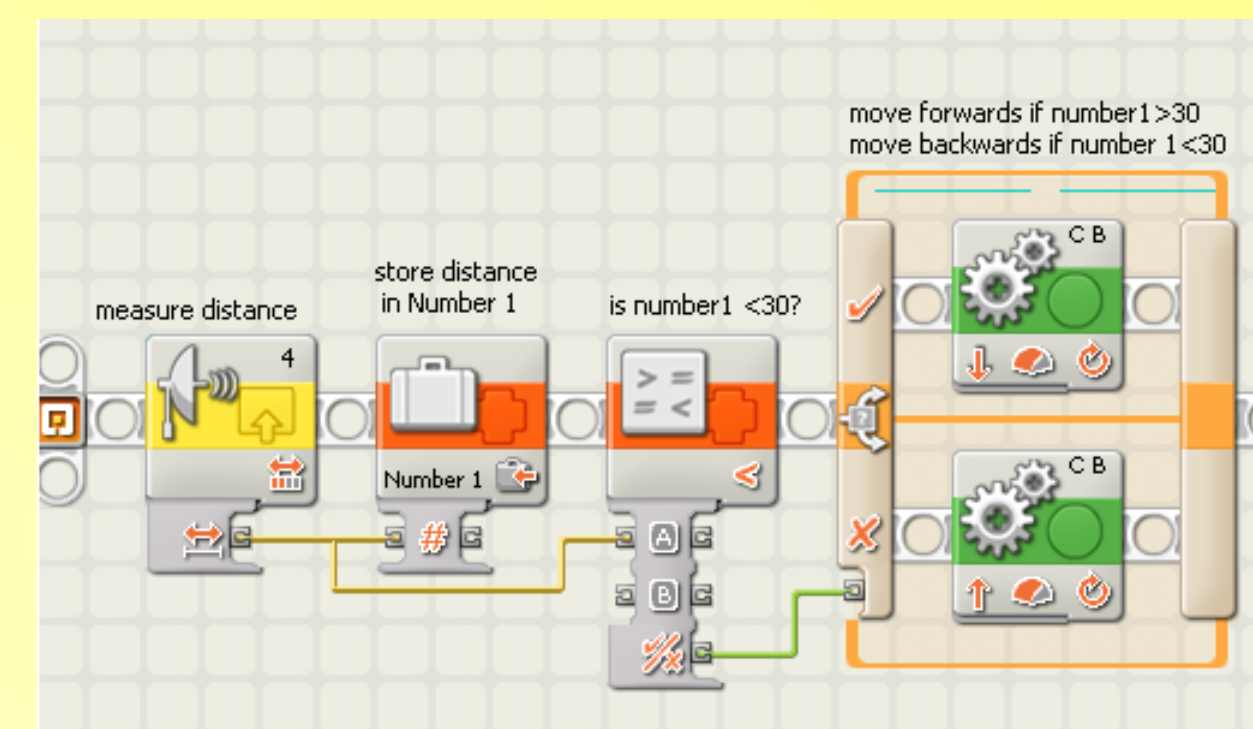
- Statements are based on sensor input.
- In this case pushing a button determines the direction the robot moves.

## Loops



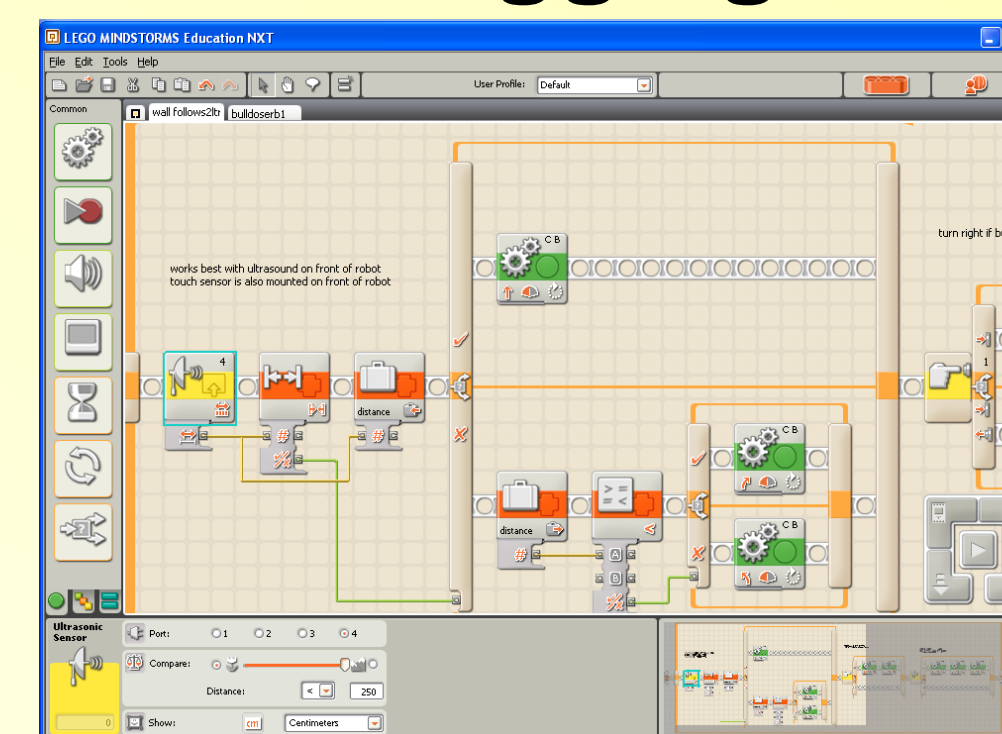
- Program flows from left to right.
- Each action has an intuitive picture (loop is a circular arrow).
- Details of each action can be set in the bottom pane.

## Variables and Style



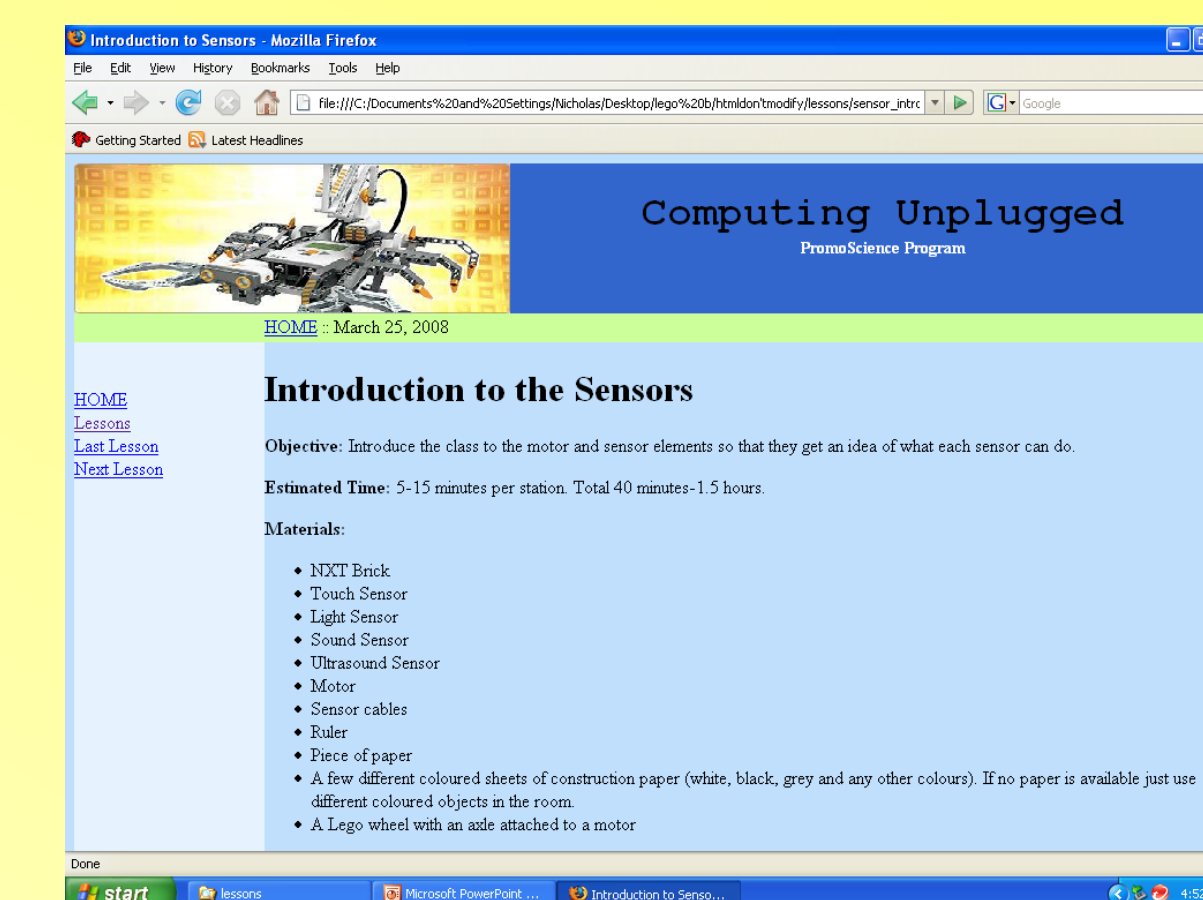
- Variables can store data and later be used in logic statements.
- This code is commented. Commenting early on will help enforce good programming practices.

## Debugging



- Students are given completed code with bugs.
- Helps reinforce commenting and problem solving.
- Introduces new ideas through the use of completed code.

## Lesson Plans



The final project is in the form of a website. The site contains lessons broken down for summer camp instructors. The content of the lessons vary and include example programs, presentations, workstations, and programming challenges.