Introduction to the NXT Brick and Software

By Sanjay and Arvind Seshan

BEGINNER PROGRAMMING LESSON

LESSON OBJECTIVES
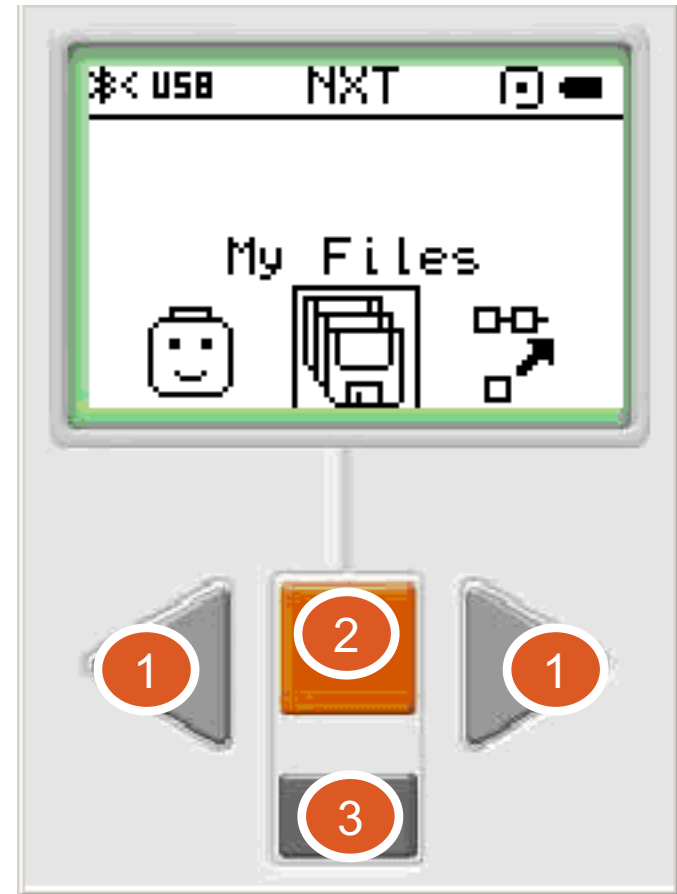
1. **Learn how the NXT brick operates**

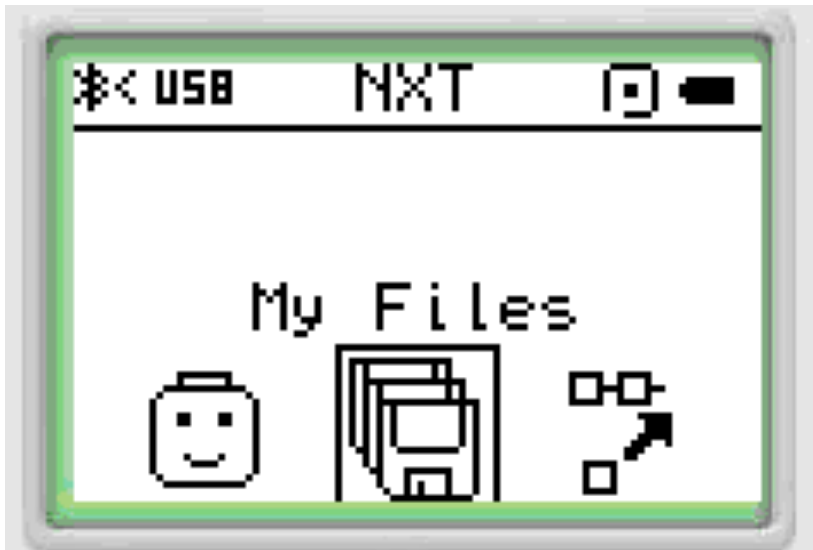2. **Learn about the main components of the EV3 software**

THE "BRICK" BUTTONS

1 = Left, Right →
Navigate menus

2 = Center Button →
Select options
Run Program
Turn robot on

3 = Back →
Undo
Stop Program
Turn robot off

THE "BRICK" SCREEN

Menus on Screen
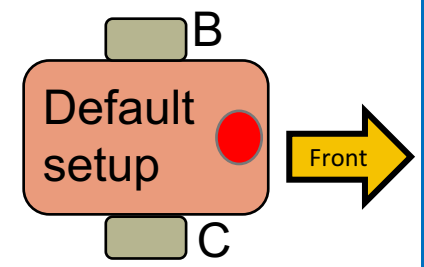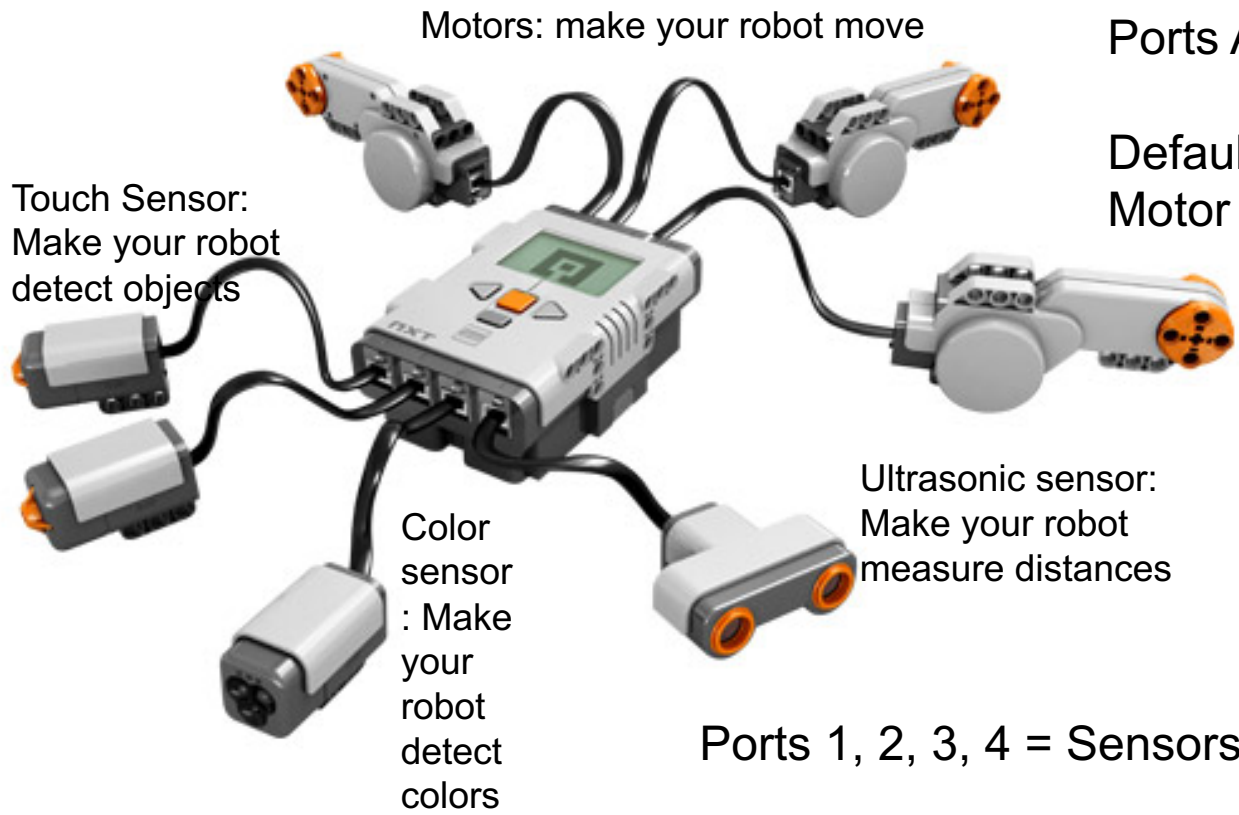
1. **My Files**
   Find programs you downloaded
2. **Use left/right**
   buttons to find other menus such as "View"

PORTS, SENSORS, MOTORS

Motors: make your robot move

Ports A, B, C = Motors

Default setup assumes Right Motor is in C, Left Motor is in B

Touch Sensor: Make your robot detect objects

Color sensor : Make your robot detect colors

Ultrasonic sensor: Make your robot measure distances

Ports 1, 2, 3, 4 = Sensors

B

Default setup

Front

C

EV3 SOFTWARE

Open Saved Project

Open New Project

EV3 SOFTWARE: STARTING A NEW PROGRAM

Create a Project

Opened Programs

Create a Program

Opened Projects

Project Properties

List of programs

Project* ✕ ➕

🔧 📲 Program ✕ ➕

Project Title: Project

1	PROJECT PICTURE

2	PROJECT DESCRIPTION

☐ Daisy-Chain Mode

Programs	Images	Sounds	My Blocks	Variables	Exportable Items

Type	Name		Show	Teacher Only
📲	Program.ev3p		☑	☐

Copy   Paste   Delete   Import   Export

PROJECTS VS. PROGRAMS

- You will start by creating a PROJECT which has a .ev3 extension. You change the name of a project by using the Save Project As option from the File menu.

- You will write many PROGRAMS as part of each PROJECT file. You change the name of a program within a project by doubling clicking on the program's tab and typing in a new name.

- Note: If there is an * next to the project name, you have made changes to the project and you have not yet saved yet.

- There is a "x" next to project and program names. Clicking on it simply closes the file (it does not get deleted).

Here are some common file extensions in the EV3:

- Programs (.ev3p)
- Images (.rgf)
- Sounds (.rsf)
- Text (.rtf)
- Projects (.ev3) – the only type of file you can open with the EV3 software
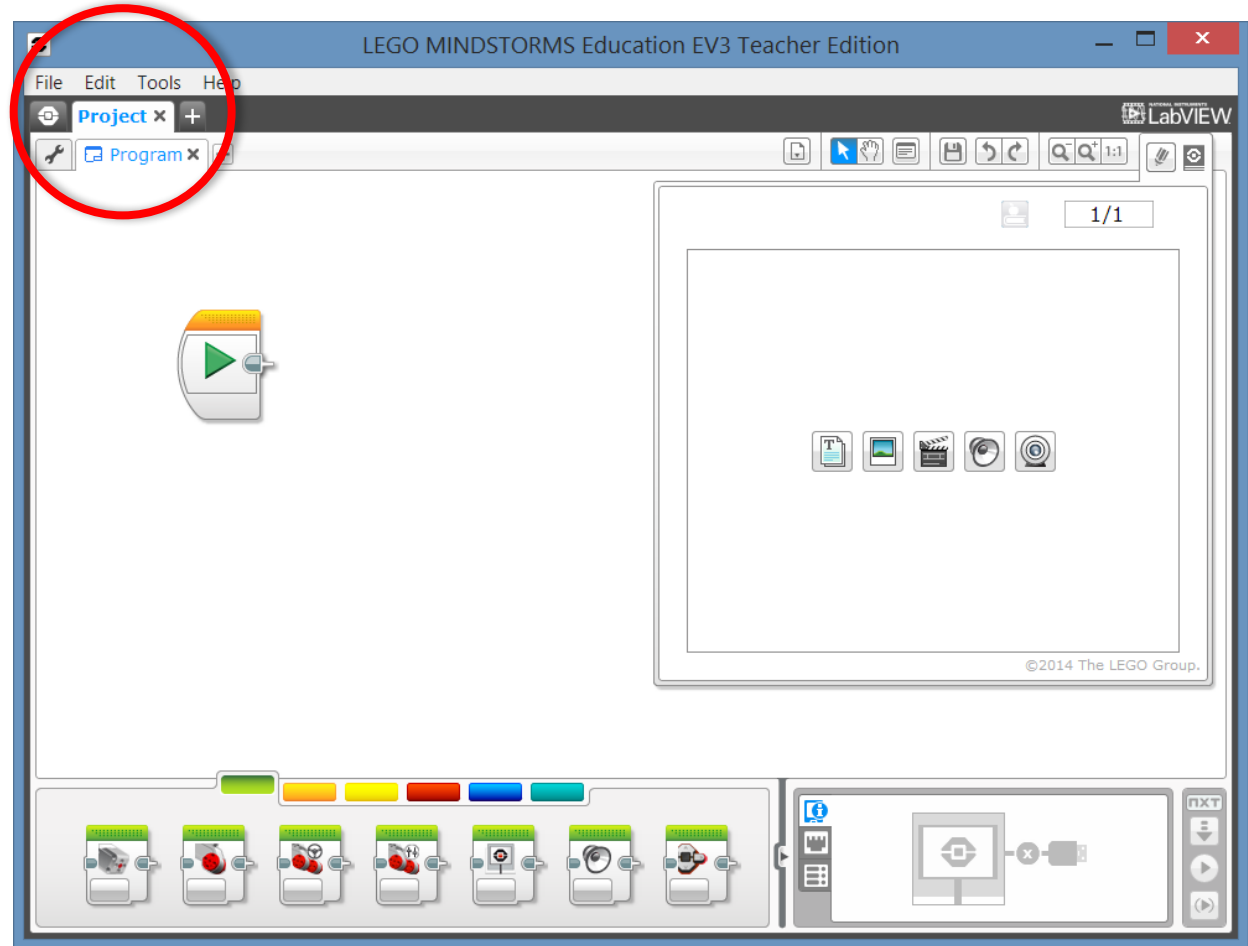- Import file (.ev3s) – can be imported by an EV3 project

NAMING & SAVING YOUR WORK

Changing the Program Name

> Double click on "Program"

Saving your Project
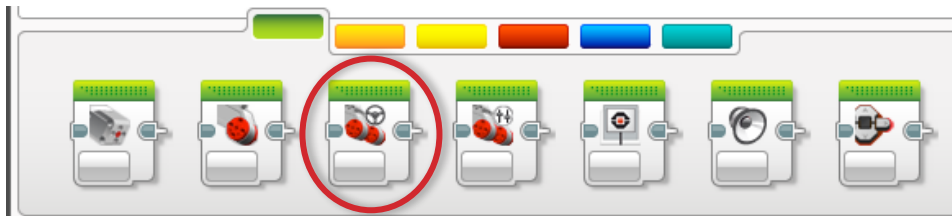
> Select File and "Save Project As"

EV3 SOFTWARE: PROGRAMMING SCREEN
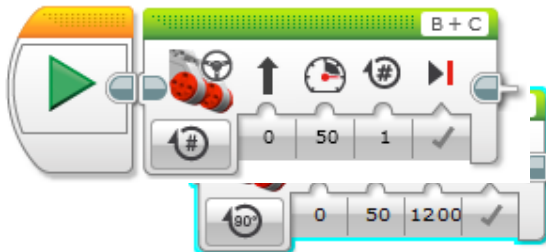

Programming Area or Canvas

Programming Blocks in 6 Colored Tabs

Brick Status & Downloading

ADDING BLOCKS TO YOUR PROGRAM

STEP 1: Green Block Tab, Click and hold any block and drag to programming area

STEP 2: Drop next to the Start Block (green arrow)
(See animation)

USEFUL ICONS

1. **List Programs in Project**: List of **all** programs in the project
2. **Select:** The cursor looks like an arrow and you can pick specific blocks or areas of the screen
3. **Pan**: The cursor looks like a hand. When you click and move the mouse, you can move through the program when it goes beyond one screen.
4. **Comments**: Click on this icon to create the comment box
5. **Save Project**: Save the current version of your project
6. **Undo and Redo**: Undo or redo the last actions
7. **Zoom Out, Zoom In, and Reset Zoom**: Use to decrease, increase or reset the magnification

EV3 BLOCKS: COLORED TABS

ACTION BLOCKS
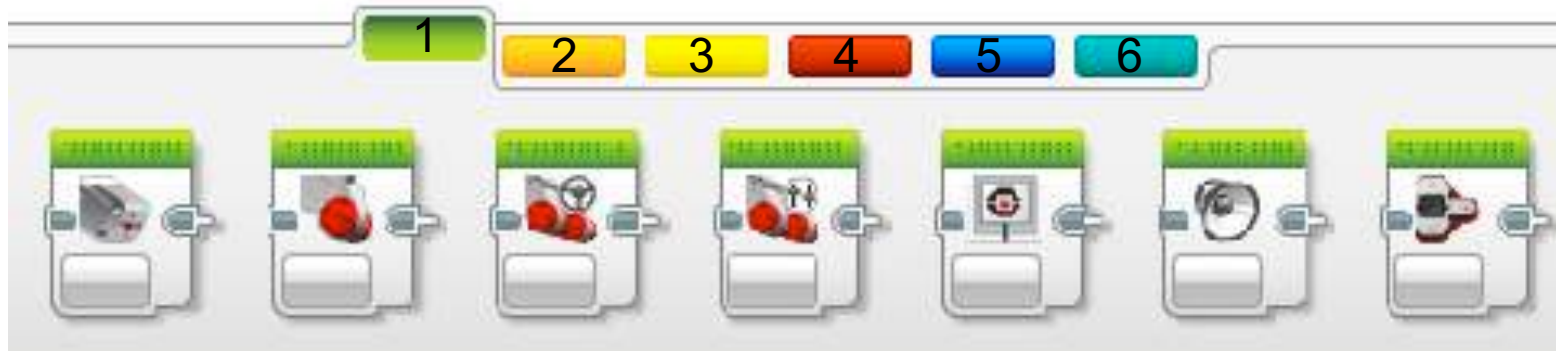Move, Large & Medium
Motor, Display…   1

FLOW BLOCKS
Start, Wait, Loop,
Switch, Loop Interrupt 2

SENSOR BLOCKS
Brick Buttons, Gyro,
Color, Ultrasonic   3

DATA OPERATIONS
Variables, Array, Logic,
Math, Compare…   4

ADVANCED BLOCKS
Data Logging,
Unregulated Motor… 5

MY BLOCKS
Custom Blocks you
create   6

CREDITS

Author: Sanjay and Arvind Seshan

More lessons are available at www.ev3lessons.com