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

Ports 1, 2, 3, 4 = Sensors

Ports A, B, C = Motors

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

Motors: make your robot move

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
EV3 SOFTWARE

Open New Project

Open Saved Project
EV3 SOFTWARE: STARTING A NEW PROGRAM

- Create a Project
- Opened Programs
- Create a Program
- Opened Projects
- Project Properties
- List of programs

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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

<table>
<thead>
<tr>
<th>ACTION BLOCKS</th>
<th>FLOW BLOCKS</th>
<th>SENSOR BLOCKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move, Large &amp; Medium</td>
<td>Start, Wait, Loop,</td>
<td>Brick Buttons, Gyro, Color,</td>
</tr>
<tr>
<td>Motor, Display…</td>
<td>Switch, Loop Interrupt</td>
<td>Ultrasonic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DATA OPERATIONS</th>
<th>ADVANCED BLOCKS</th>
<th>MY BLOCKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variables, Array, Logic, Math, Compare…</td>
<td>Data Logging, Unregulated Motor…</td>
<td>Custom Blocks you create</td>
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CREDITS

Author: Sanjay and Arvind Seshan
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