

Intermediate EV3 PROGRAMMING LESSON

Variables



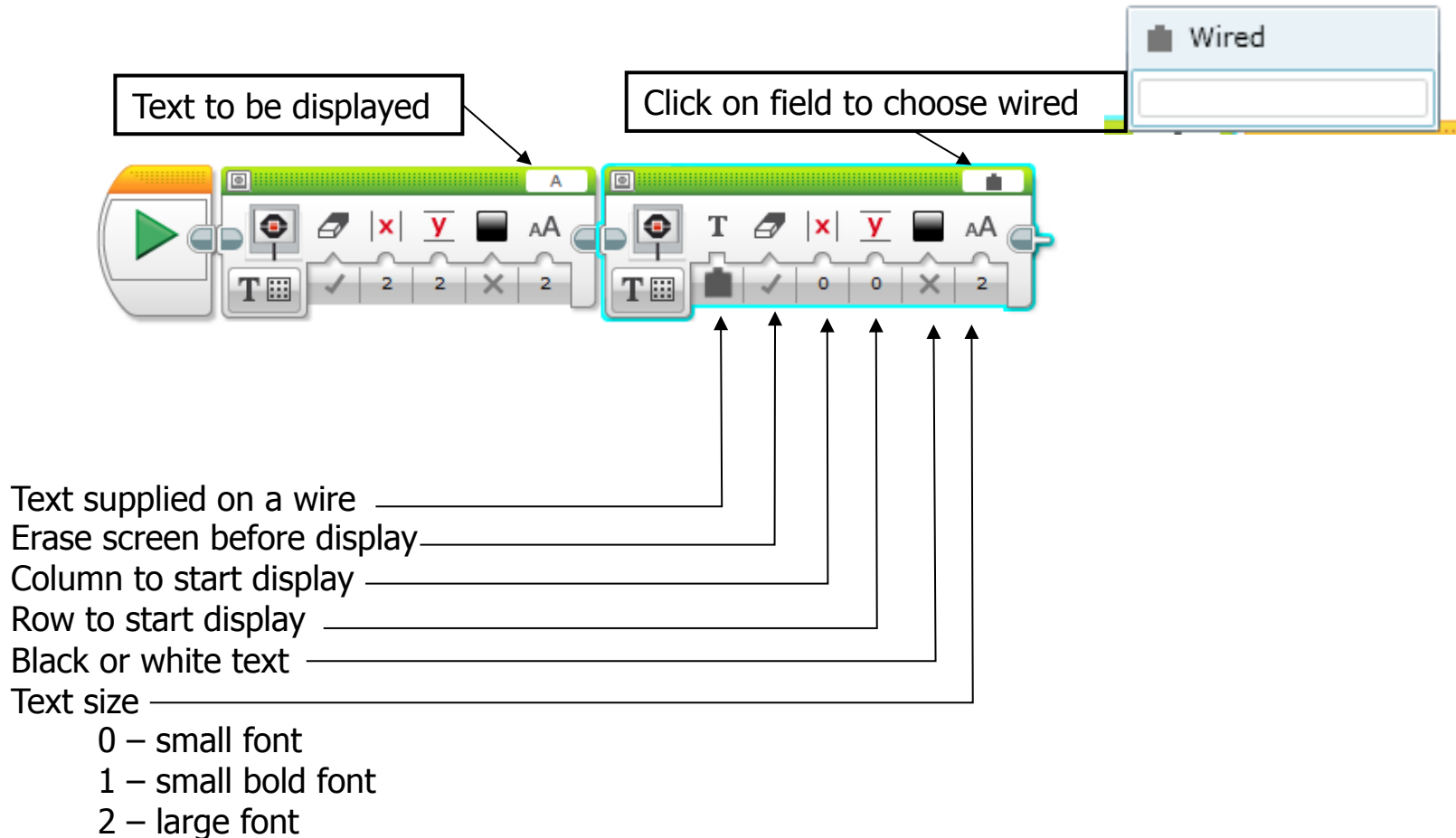
By Droids Robotics



Objectives

- Learn about different types of variables
- Learn how to read and write to variables
- Prerequisites: Data wires, Color Sensor, and Display Blocks, Wait blocks

Additional Tool: Wired Display Blocks



Variables

- What is a variable? **Ans. A variable stores a value that you can use later in your program. Think of it like a notepad or a box that holds a value for you.**
- You can name the variable whatever you want
- You can define the type of variable:
 - Numeric (Holds a number)
 - Logic (Holds True/False)
 - Text (Holds lines of text ... “Hello World”)
 - Numeric Array (Holds a set of numbers ... 1,2,3,10,55)
 - Logic Array (Holds a set of logic ... True, True, False)
- They can be used as either **Inputs or Outputs** so you can either....
 - Write – put a value into the variable
 - Read – retrieve the last value written to the variable

Why Variables?

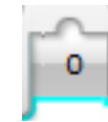
- Variables are an easy way to transfer data across code without too many data wires
- You can also use variables to transfer data into a My Block **without an input** (eg. A variable for wheel size in Move Inches – You probably do not want this to be an input since it rarely changes. You may also use the value in other locations and want to change it just in one spot.)
- Array variables can store multiple data items without needing several wires or variables
- Having too many data wires or variables makes your code messy

Variable Blocks

Numeric

Logic

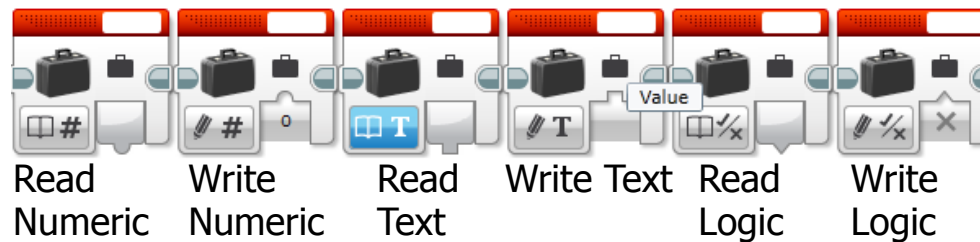
Text



Write (Inputs) have a bump up

Read (Outputs) have a bump down

Use the key above to identify if the variables are Inputs or Outputs and if they are Numeric, Logic or Text



TIP: You can change the type of variable at the bottom-left part of the block.
When you display logic to the screen it will show 1 for True or 0 for False

Outputs of different types of variables

Can you guess what each of these do?

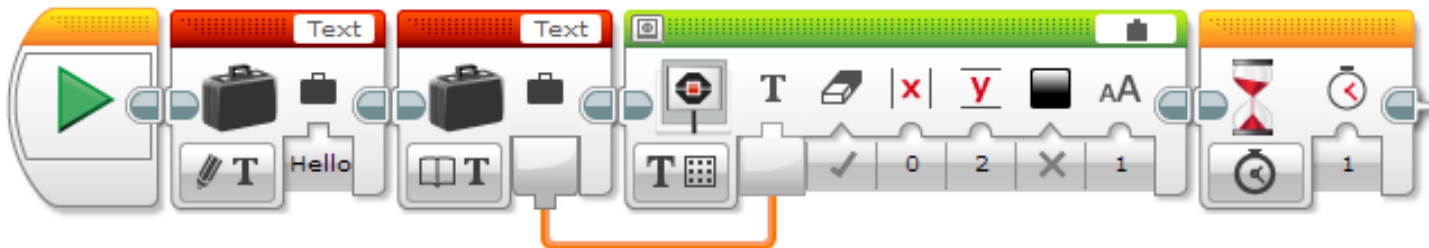
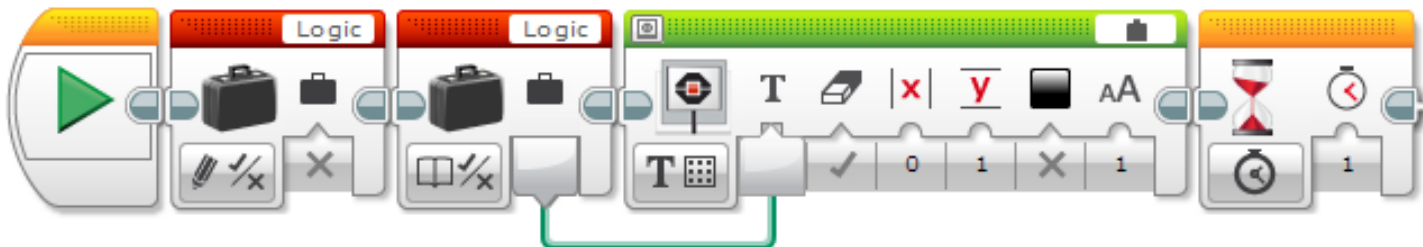
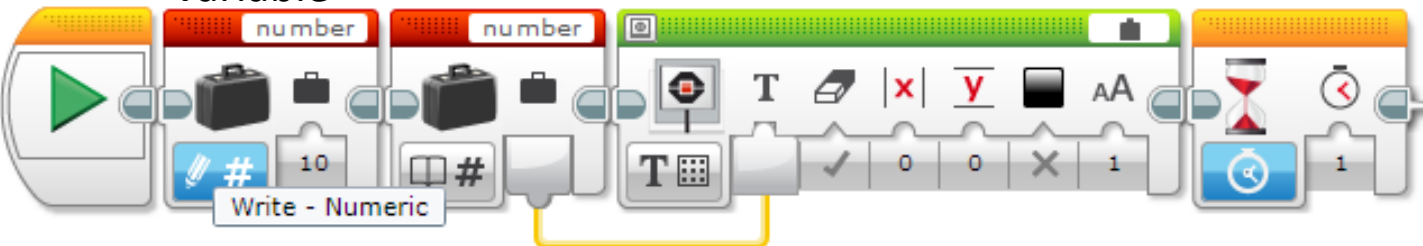
Write to
the
variable

Here we display the value of the variable to the
screen

Numeric Variables:
This will display 10
on the screen

Logic Variables:
This will display 0
on the screen

Text Variables:
This will display
Hello on the
screen



Challenges

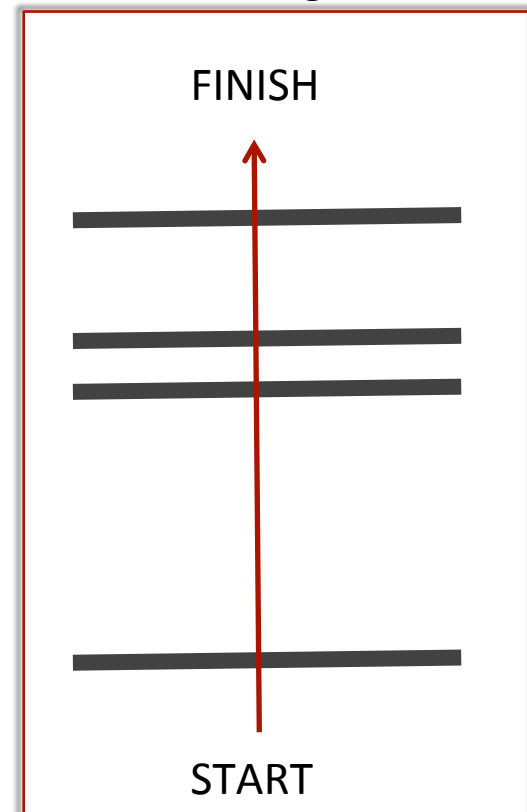
➤ Challenge 1:

➤ Can you make a program that displays the number of times that you have clicked the up button?

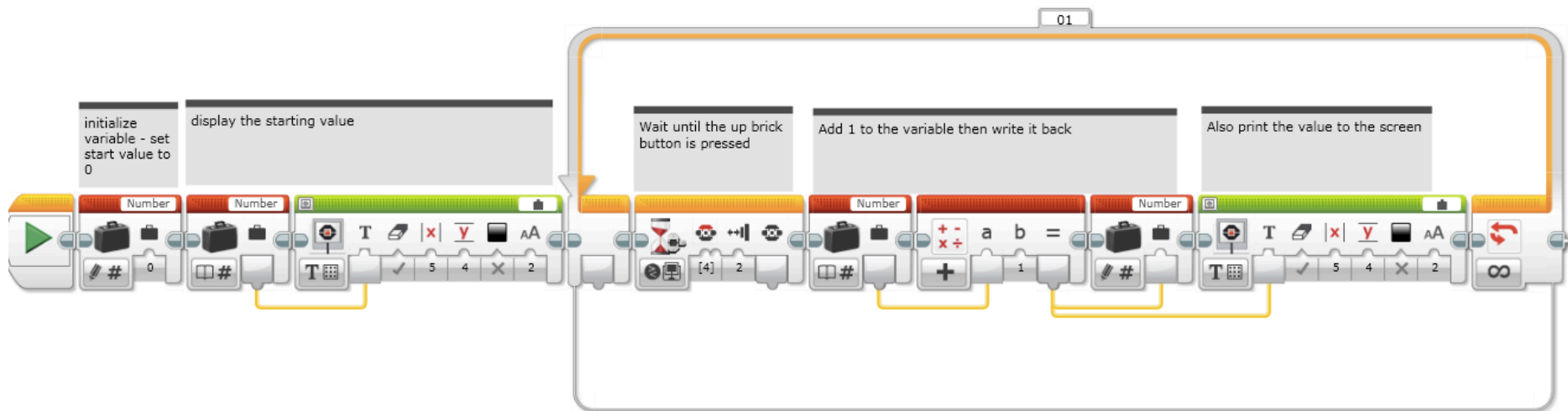
➤ Challenge 2:

➤ Can you write a program that counts the number of black lines you have crossed?

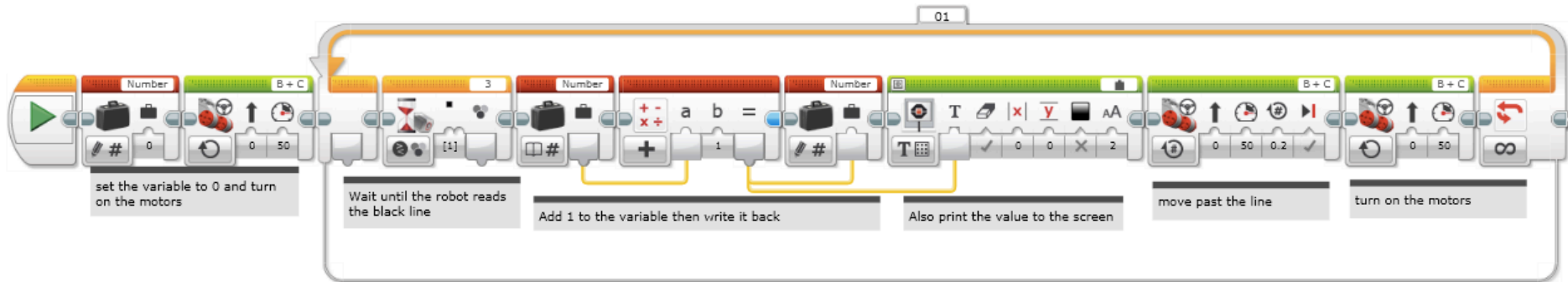
Challenge 2



Challenge 1 Solution: Count Clicks



Challenge 2 Solution: Count the Lines



Next Steps

- We use variables in the following lessons:
 - Advanced: Menu System
 - Advanced: Parallel Beam Synchronization

Credits

- This tutorial was created by Sanjay Seshan and Arvind Seshan from Droids Robotics (team@droidsrobotics.org).
- More lessons at www.ev3lessons.com



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