# Advanced Programming Lesson: Menu System
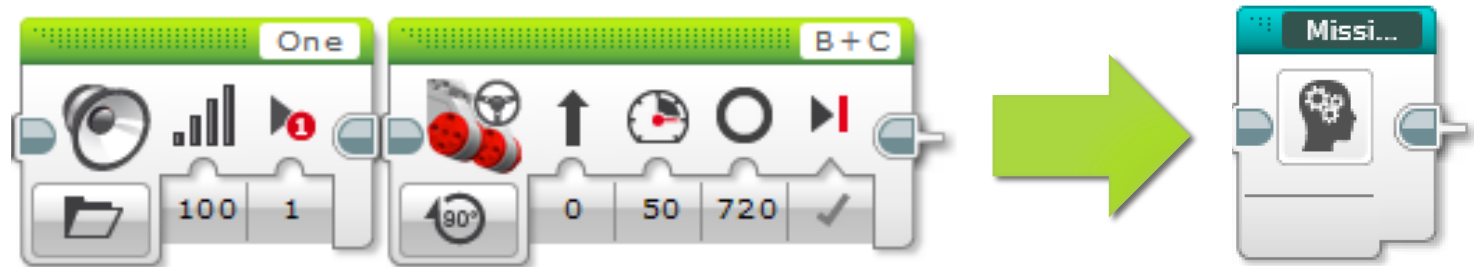
EV3LESSONS.COM AND DROIDS ROBOTICS

What is a Menu System and Why Use It?

➤A menu system (also called a Sequencer or Master Program) is an organized way to easily run programs without having to search for the code

➤Allows you to skip missions

➤This more advanced lesson allows you to repeat failed missions

Mission 1 ➤ Mission 2 ➤ Mission 3
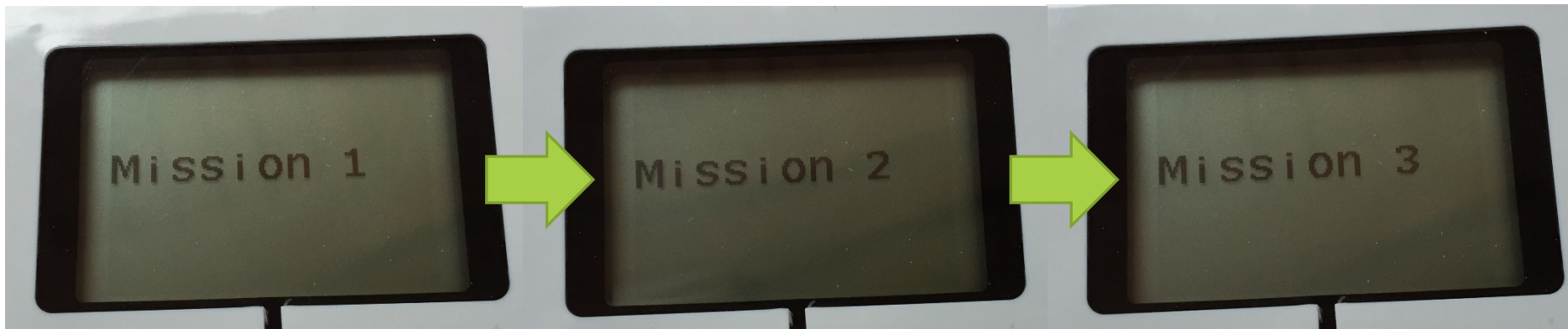
Step 1: Convert Missions to My Blocks

You need to convert each mission into its own My Block

If you don't know how to make a My Block, see the Intermediate lesson on My Blocks

There is no Step 1 and 2 in the EV3 Code file. Learn Step 1 and 2 from the Powerpoint/PDF and then continue with Step 3 in the EV3 Code file.

Step 2: Add a Current Mission Variable

Variables can be used to store information such as a sensor reading. In this program, we are going to use a variable to store the current mission that we are running.

To create a variable:

1. Add a variable block

2. Select the type of variable by changing the mode to "Write X" where X is one of Text, Numeric, Logic, Numeric Array or Logic Array. Since we are storing the mission number – chose Numeric.

3. Click on the box at the top right and select Add Variable. For this program, create a variable called "Mission Number"
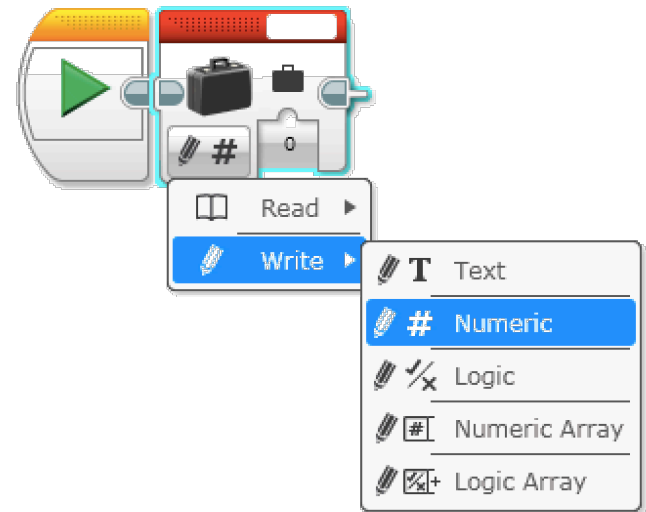
Variable Types

Different types of variables can store different types of information.

1. Text – any text, e.g.: "FLL is great" or "Run 2"

2. Numeric – any number, e.g.: 5, 5.2 or -4.22

3. Logic – True or False

4. Numeric Array – a collection of numbers, e.g.: (5,2,2) or (3,4,5,6)

5. Logic Array – a collection of true/false values, e.g.: (T, T, F) or (F, F, T, F)

In this lesson, we only use numeric variables. Logic variables and arrays will be covered in another lesson.

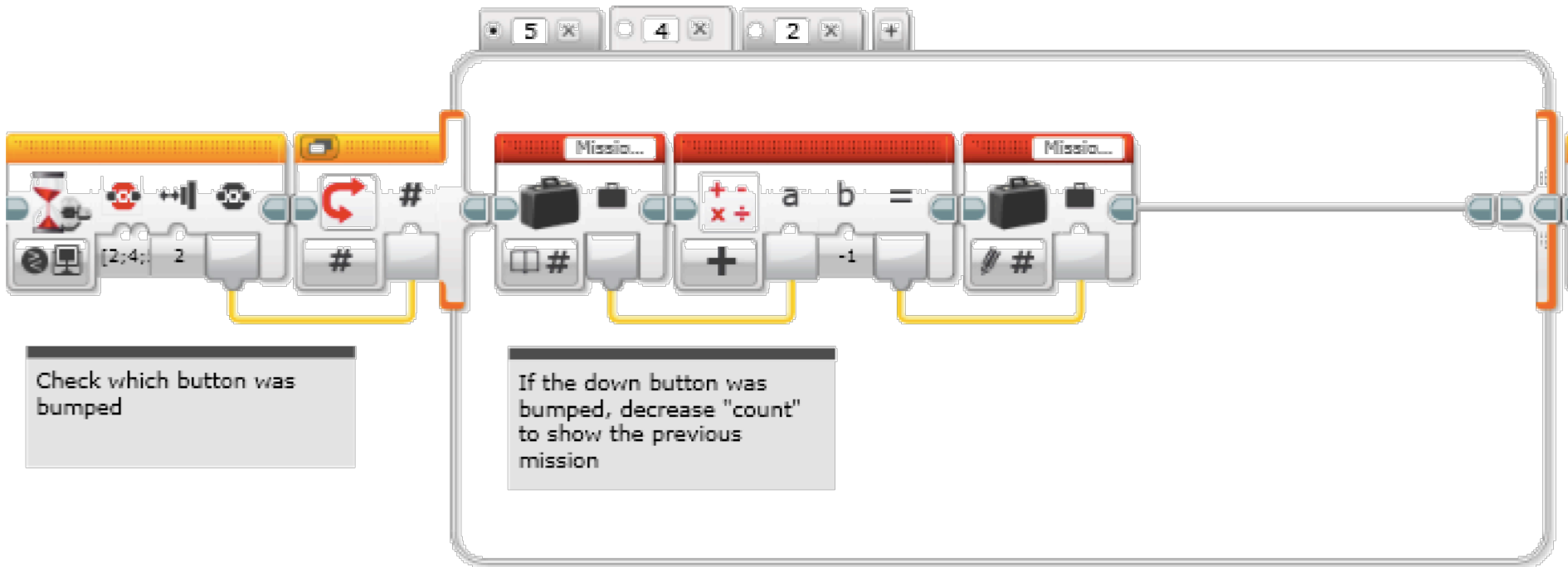# Step 3: Display Current Mission Choice

You can combine a switch block set to numeric mode and a variable block set to read to display the current mission name

You should select just the switch block and create a My Block called Display_Mission.
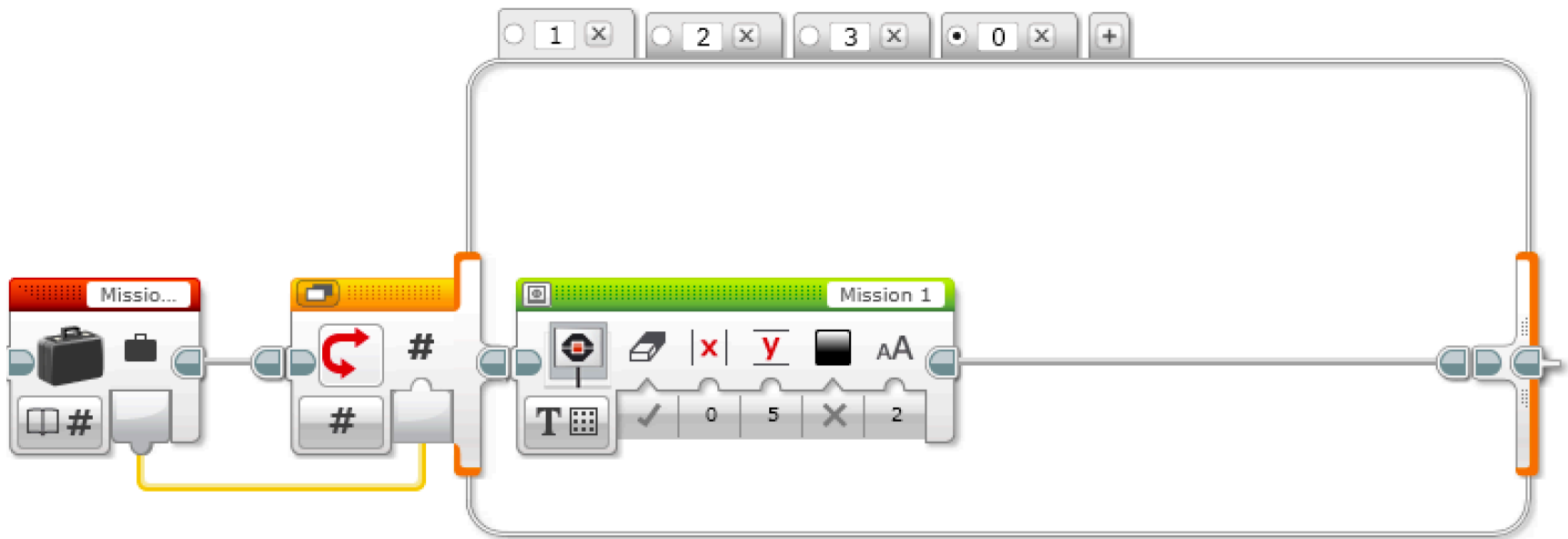
Step 4: Increasing/ Decreasing Mission Choice

You can use a wait for menu button block and a switch to decrease the mission number if you hit the up button. The down button choice (Tab 5) is similar but increases the mission number.

Check which button was bumped

If the down button was bumped, decrease "count" to show the previous mission

Step 5: Using a Variable to Run Chosen Mission

You can combine a switch block set to numeric mode and a variable block set to read to run a specific mission

You should select just the switch block and create a My Block called Run_Mission.
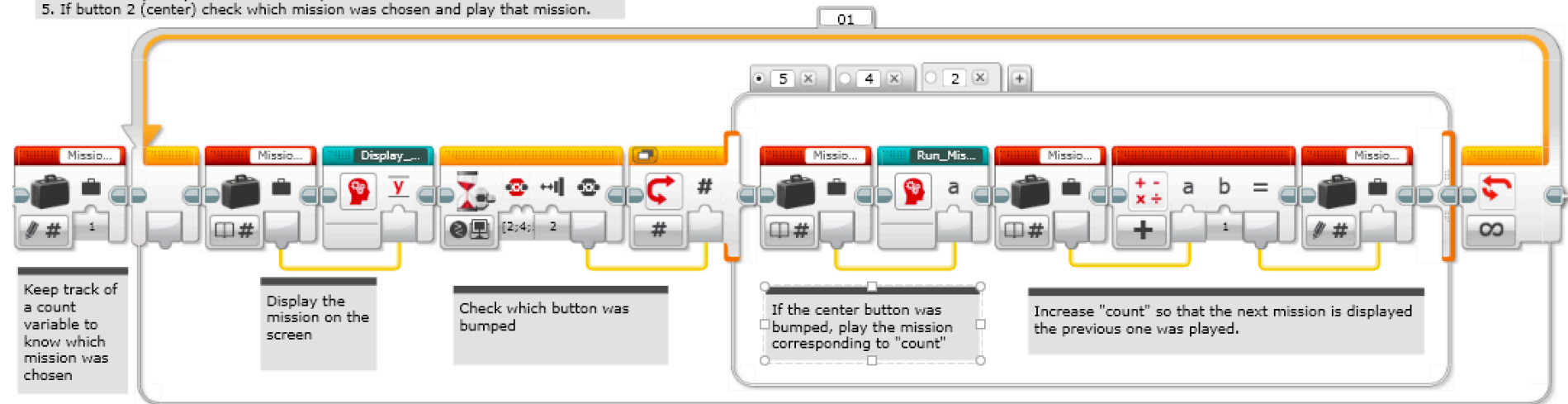
Code: Menu Sequencer

You can combine the previous steps to create a menu-based sequencer that lets you select the mission using the up and down arrows

The goal of this mission is to create an advanced menu system which allowes you to skip missions or repeat a failed mission.
Pseudocode:
1. Display all the missions with an arrow
2. Check which button was bumped
3. If button 5 (up) move the arrow down
4. If button 4 (down) move the arrow up
5. If button 2 (center) check which mission was chosen and play that mission.

Keep track of a count variable to know which mission was chosen

Display the mission on the screen

Check which button was bumped

If the center button was bumped, play the mission corresponding to "count"

Increase "count" so that the next mission is displayed the previous one was played.

Credits

- This lesson was written by Sanjay and Arvind Seshan from Droids Robotics.

- Feel free to use and modify, but credit the original authors.

- More lessons are available at www.ev3lessons.com