# SPIKE 2 VS. SPIKE 3 AND DOWNGRADING THE HUB

## BY SANJAY AND ARVIND SESHAN

This lesson uses SPIKE 3 software

# LESSON OBJECTIVES

■ Learn how to downgrade your hub back to SPIKE 2 (Legacy) if needed

# HOW TO DOWNGRADE YOUR HUB

**STEP 1: Follow the instructions CAREFULLY in the Downgrade tool:**

https://spikelegacy.legoeducation.com/hubdowngrade/

**STEP 2: Go back to or Install the SPIKE App 2, now called SPIKE Legacy App.**

**STEP 3: Open SPIKE 2 (LEGACY) and Update the Hub as requested in the pop-up**

Your hub will now be a SPIKE 2 Hub.

Read about differences between SPIKE 2 and SPIKE 3 here: (https://legoeducation.atlassian.net/servicedesk/customer/portal/3/article/36817141835)

**Connect your Hub in Update Mode**

1. Make sure the Hub is turned off.
2. Hold down the Connection Button and plug in the USB cable.
3. Keep holding the Connection Button until the Connection LED start blinking in multiple colors.
4. Press the "Open Connection Window" button below and select the hub in the device list

**Open Connection Window**
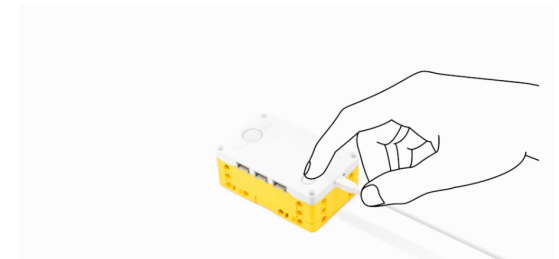
# SPIKE 2 PROGRAMS CAN OPEN IN SPIKE 3

- The Release Notes for SPIKE 3 indicate that you can open your SPIKE 2 (Legacy) code in the SPIKE 3 App.

- Note that if you do try to open a SPIKE 2 Legacy project, it does show a pop-up saying that the code will work differently.

- Code blocks get changed. Some blocks are removed and some are replaced with alternative blocks that may or may not act the same way as the original code.

Spike V2 Legacy Code

```
when program starts
set movement motors to   A+B
set movement speed to   50 %
set 1 motor rotation to   17.5   cm   moved
move for   10   cm   at   50   50 % speed
start moving at   50   50 % speed
move   right: 30   for   10   cm   at   50 % speed
start moving at   50   50 % power
start moving   straight: 0   at   50 % power
A   turn stall detection   on
```

Code automatically modified when opened in SPIKE V.3

```
when program starts
set movement motors to   A+B
set movement speed to   50 %
set 1 motor rotation to   17.5   cm   moved
move   straight: 0   for   10   rotations
start moving at   50   50 % speed
set movement speed to   50 %
move   right: 30   for   10   rotations
start moving at   50   50 % speed
set movement speed to   50 %
start moving   straight: 0
```

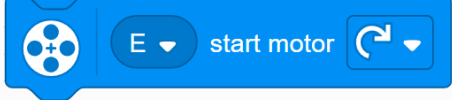**Pay close attention to changes made to your code!!!**
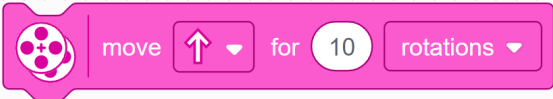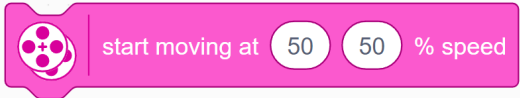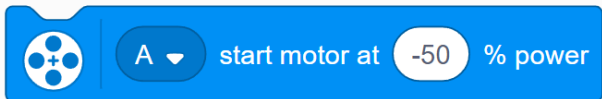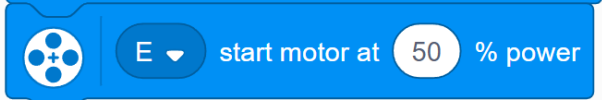
# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3

## SPIKE Legacy (2.0.9)

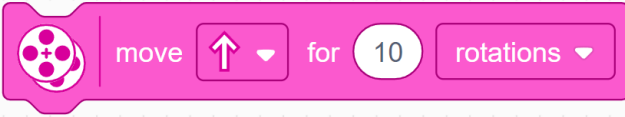| Block | Synchronization | Speed Control | Stall Detection |
|-------|:---:|:---:|:---:|
| move ↑ for 10 rotations | ✓ | ✓ | **Permanently On** |
| start moving at 50 50 % speed | ✓ | ✓ | **Permanently On** |
| start moving straight: 0 at 50 % power | ✗ | ✗ | **Permanently On** |
| A start motor ↺ / E start motor ↻ | ✗ | ✓ | **Can be enabled/disabled** |
| A start motor at -50 % power / E start motor at 50 % power | ✗ | ✗ | **Can be enabled/disabled** |

# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3

## SPIKE 3 (3.2.0)

| Block | Synchronization | Speed Control | Stall Detection |
|---|---|---|---|
| move ↑ for 10 rotations | ✓ | ✓ | **Permanently Off** |
| start moving at 50 50 % speed | ✗ | ✓ | **Permanently Off** |
| start moving straight: 0 at 50 % power | **Block no longer exists** | | |
| A start motor ↺ / E start motor ↻ | ✗ | ✓ | **Permanently On** |
| A start motor at -50 % power / E start motor at 50 % power | ✗ | ✗ | **Permanently On** |

# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3



move ↑ for 10 rotations

**SPIKE Legacy (2.0.9)**

**SPIKE 3 (3.2.0)**

Line Graph

Synchronization slows other motor down to match

Rub against motor

Hold motor

Speed control increases power to motor when motor stopped, causing sudden increase in speed when released

Line Graph

Takes much longer time to stop motor

Rub against motor

Hold motor
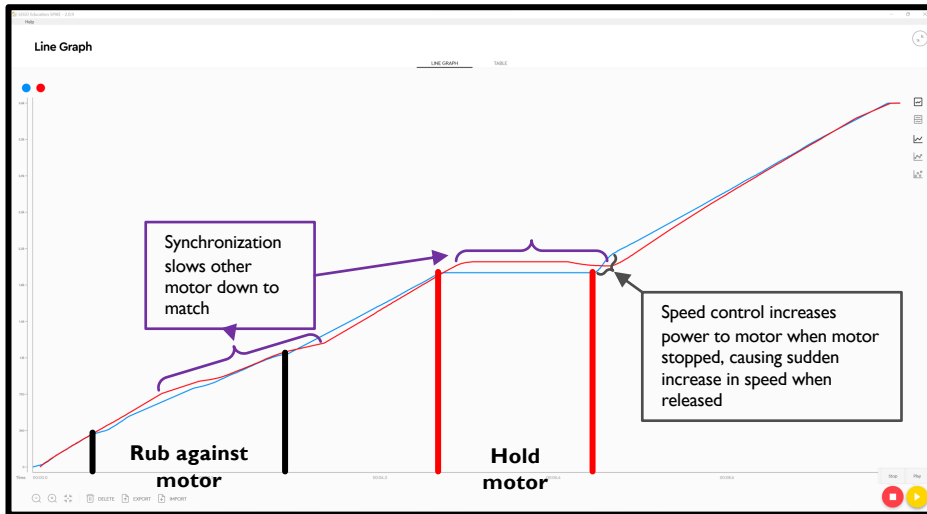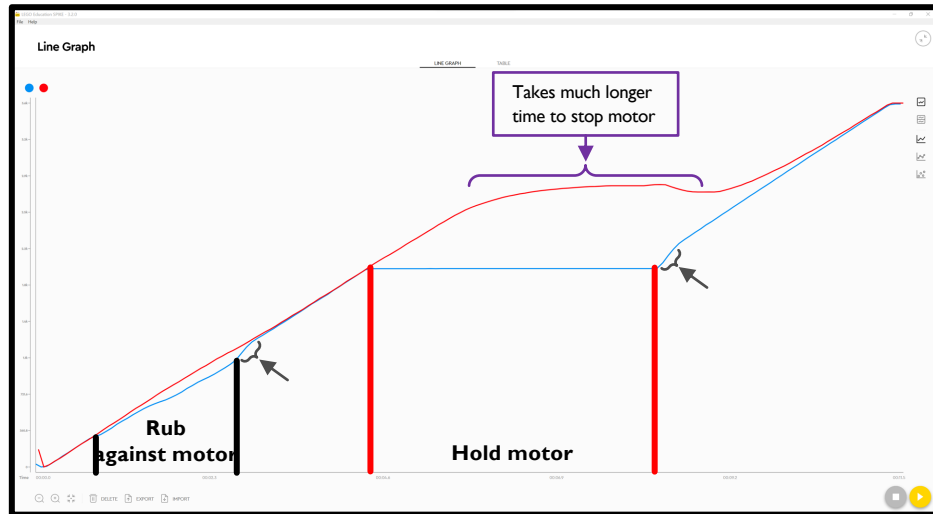
Notice similar features or lack thereof in the graphs for the other blocks

# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3
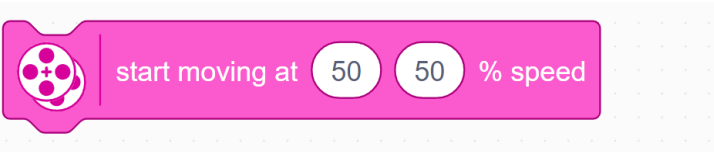


start moving at 50 50 % speed

**SPIKE Legacy (2.0.9)**

**SPIKE 3 (3.2.0)**

# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3

start moving    straight: 0    at    50    % power
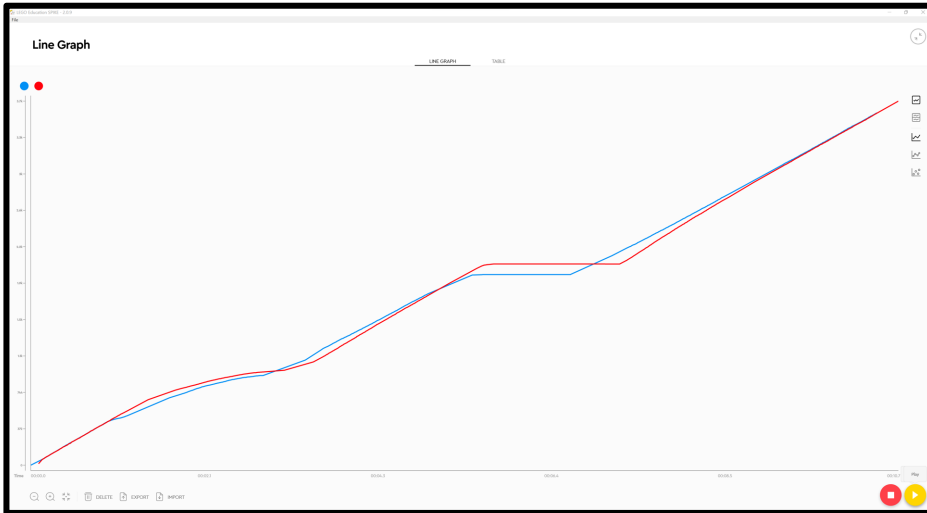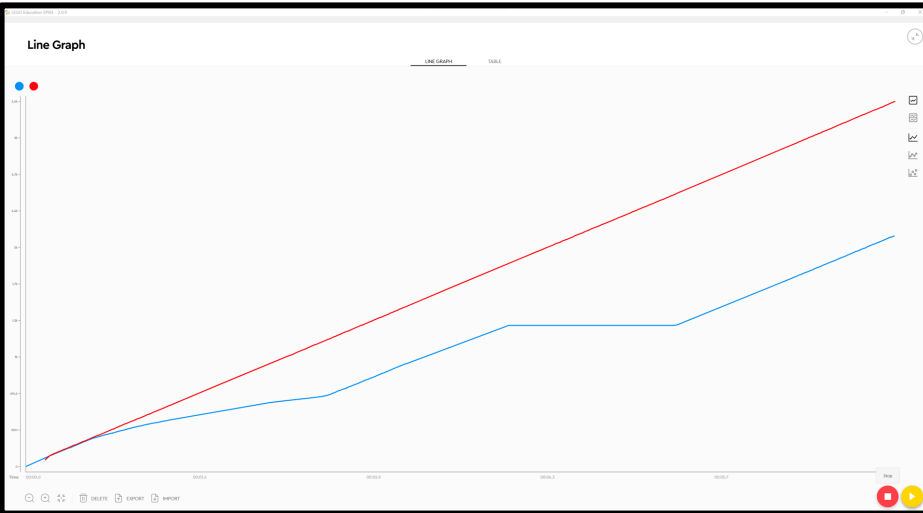
**SPIKE Legacy (2.0.9)**



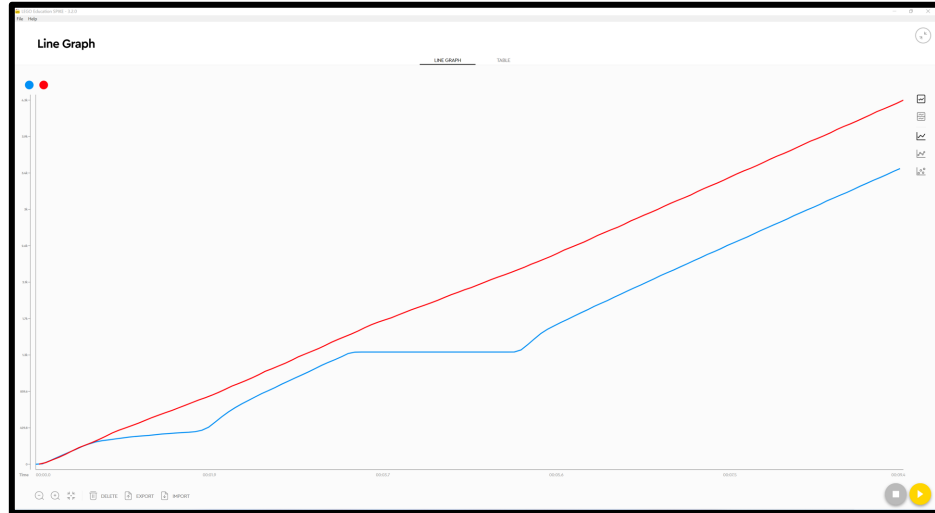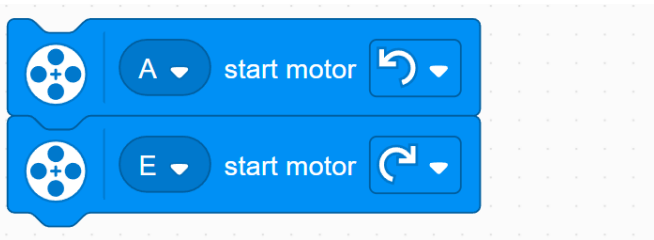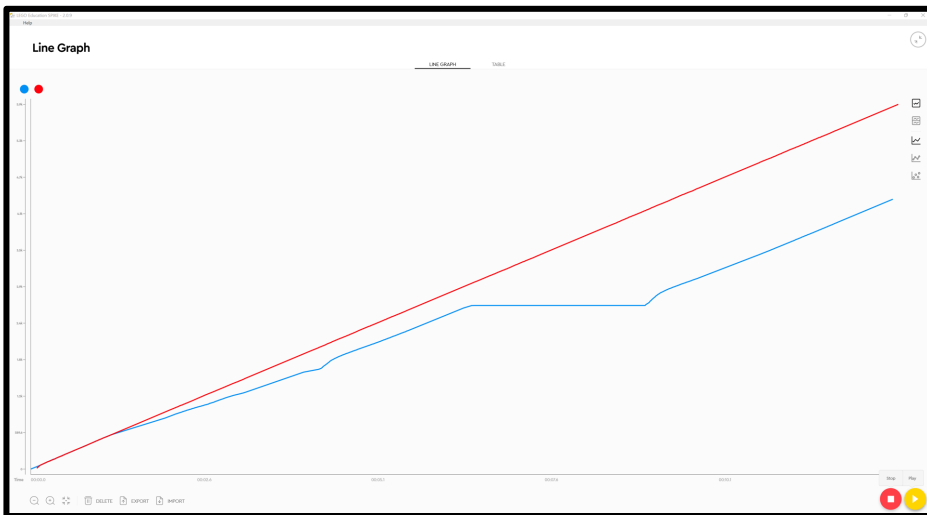**SPIKE 3 (3.2.0)**
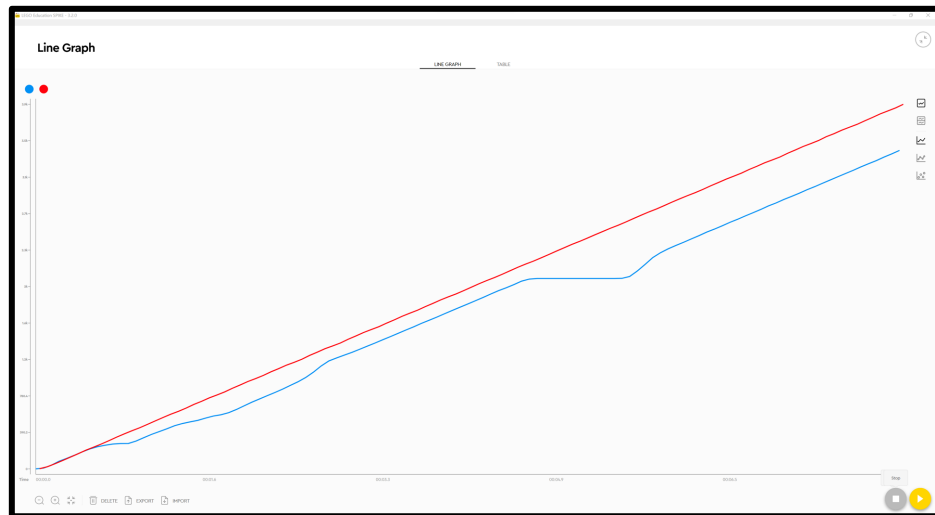
**Block no longer exists**
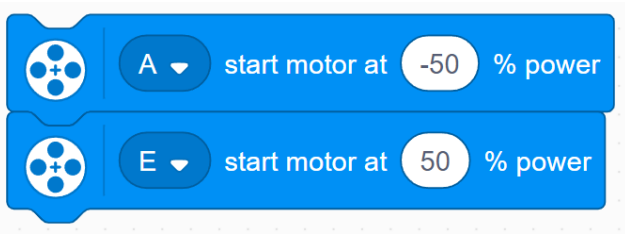
# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3
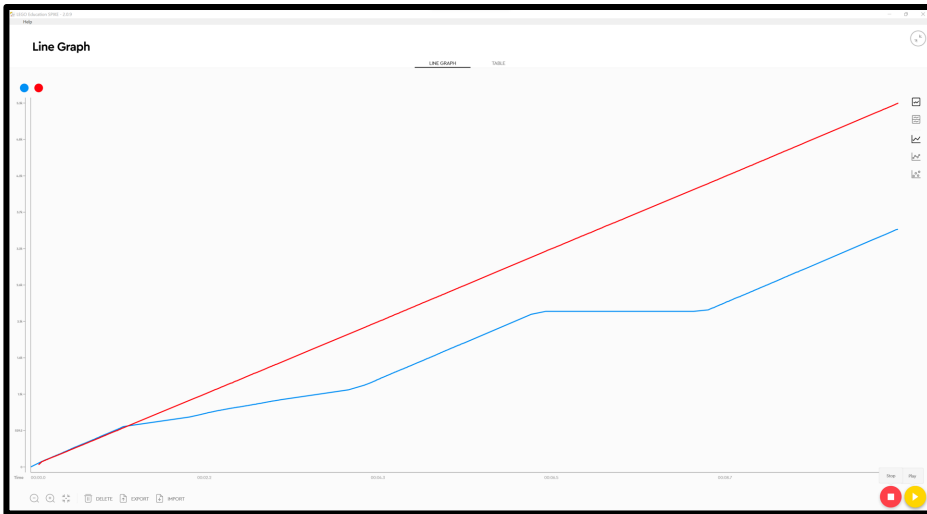


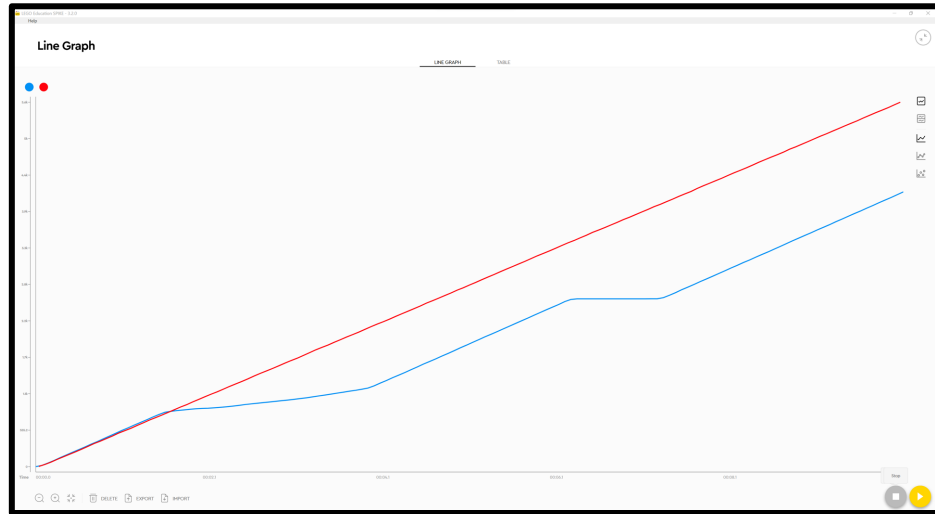**SPIKE Legacy (2.0.9)**



**SPIKE 3 (3.2.0)**

# DIFFERENCES BETWEEN SPIKE 2 AND SPIKE 3



**SPIKE Legacy (2.0.9)**



**SPIKE 3 (3.2.0)**

# CREDITS

■ This lesson was created by Sanjay Seshan and Arvind Seshan for SPIKE Prime Lessons

■ More lessons are available at www.primelessons.org