Michalis
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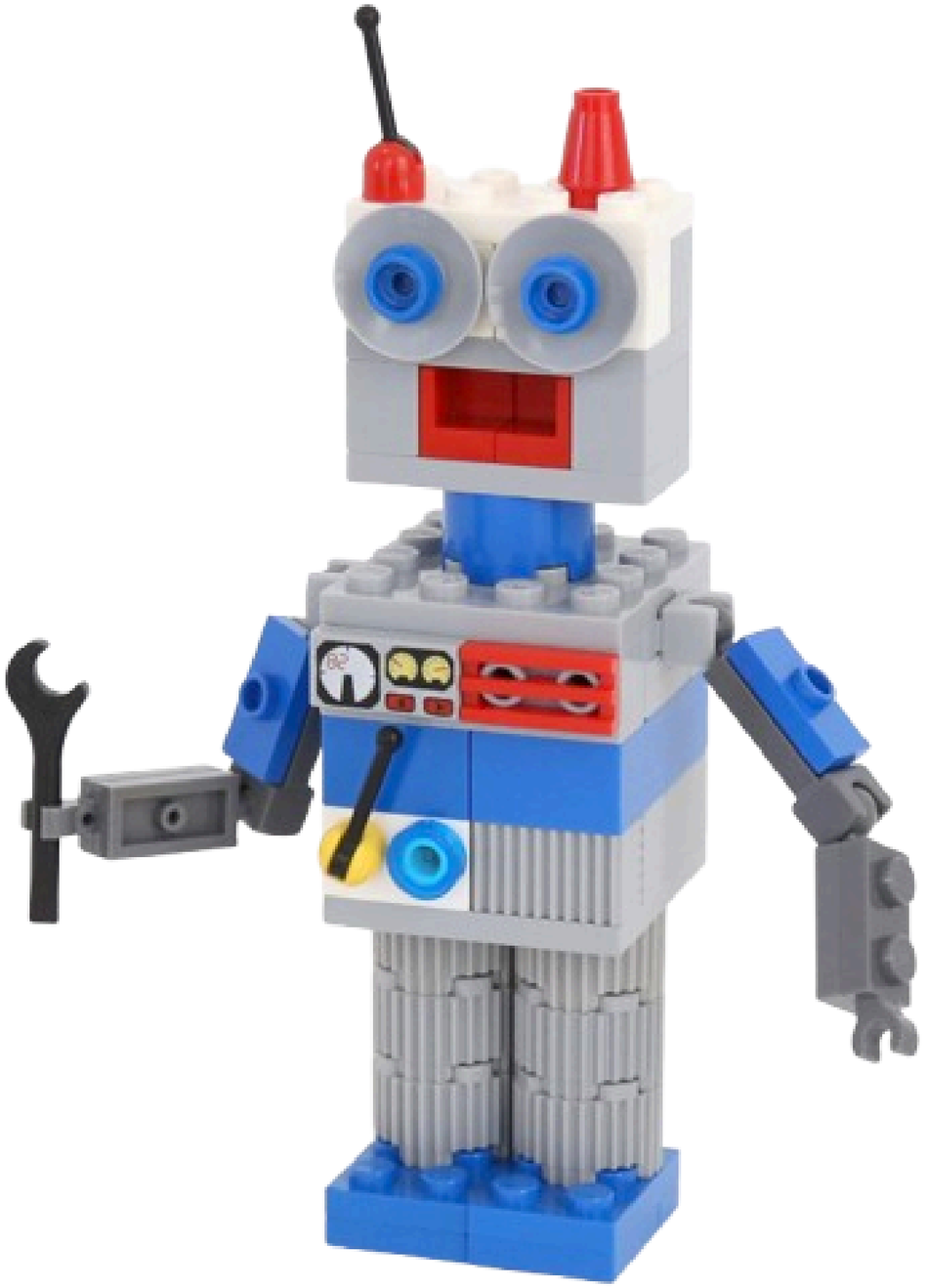
08/01/2026
Devstaff




SULLIVAN
OIL
7
CAR
MANI FOLD
INDI CATOR
4 WHEEL RATE


JPL
NASA
MARS 2020

Bring LEGOs to life

- Actuators
- Sensors
- Hub/Brain

Actuators

- Servo / Motor
- Led
- Screen
- Speaker

Sensors

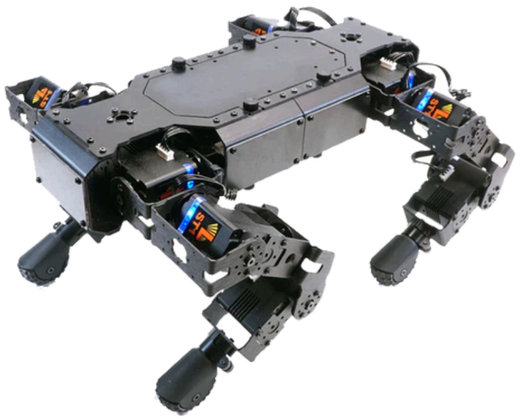
- Button
- Distance
- Illuminance
- Colour
- Gyroscope
- Compass
- Servo
- Camera
- Mic

Hub/Brain

Unit(s) that:

- Connects
- Processes
- Stores
- Controls
- Provides Energy

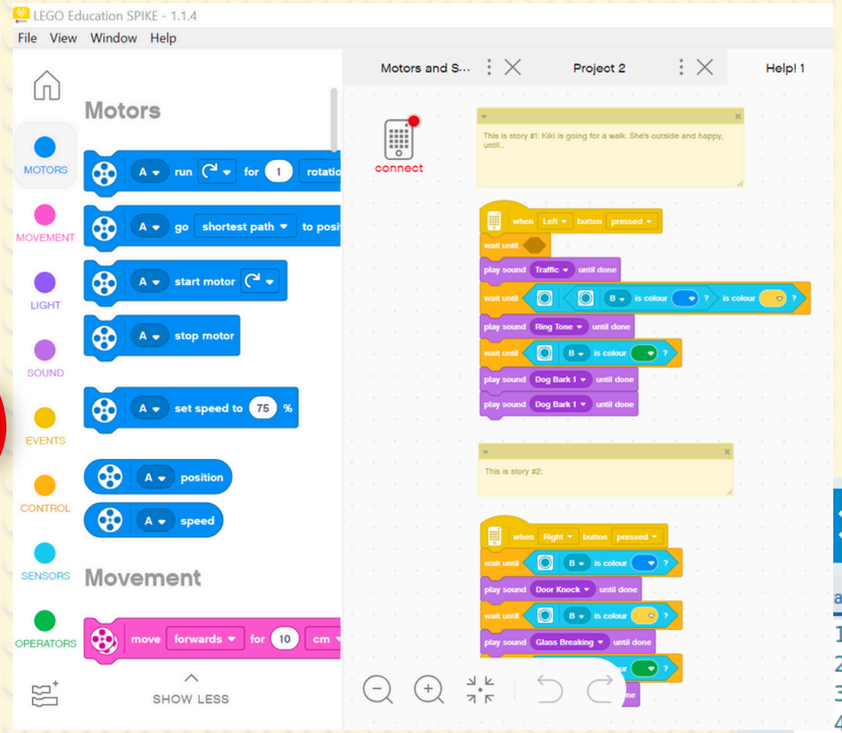
Why not use an existing robotic set?

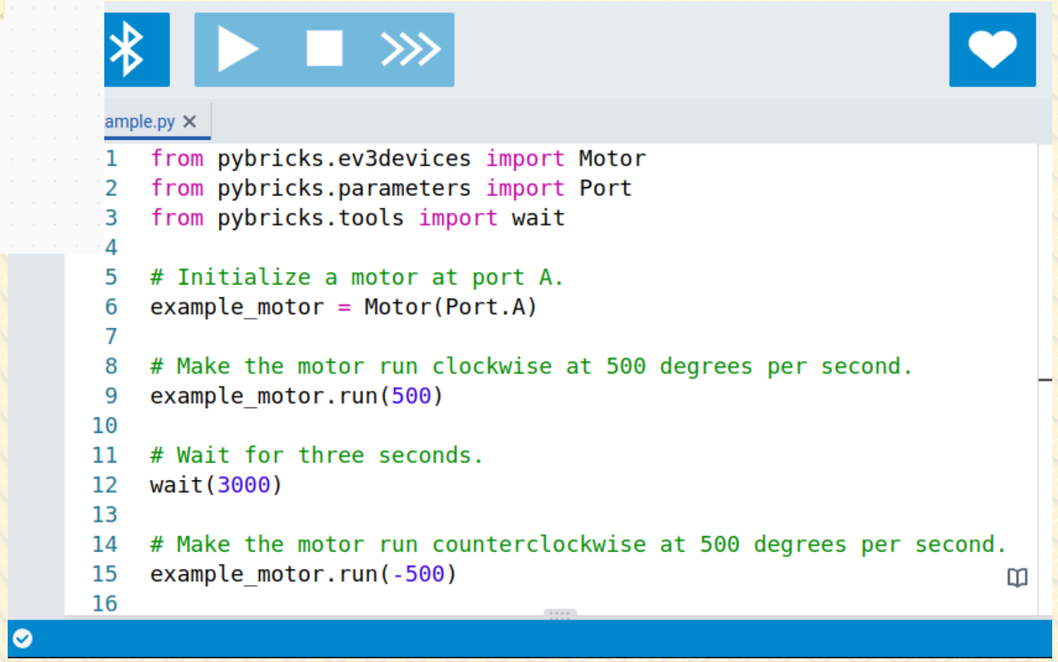


Build & Program

Programming

- Visualy
- Language(s)
- Directly





Used @

- Education
- Competitions
  - FIRST LEGO League (FLL)
  - World Robot Olympiad (WRO)
  - RoboCup Junior
  - RoboFest
- Prototyping
- Self-learning

Mindstorms (retired)

- Powerful
- Open ifaces & com protocols
- Many sensors
- 3 generations
  - RCX (‘98-’03)
  - NXT 1.0 & 2.0 (‘06-’10)
  - EV-3 (‘13-’22)

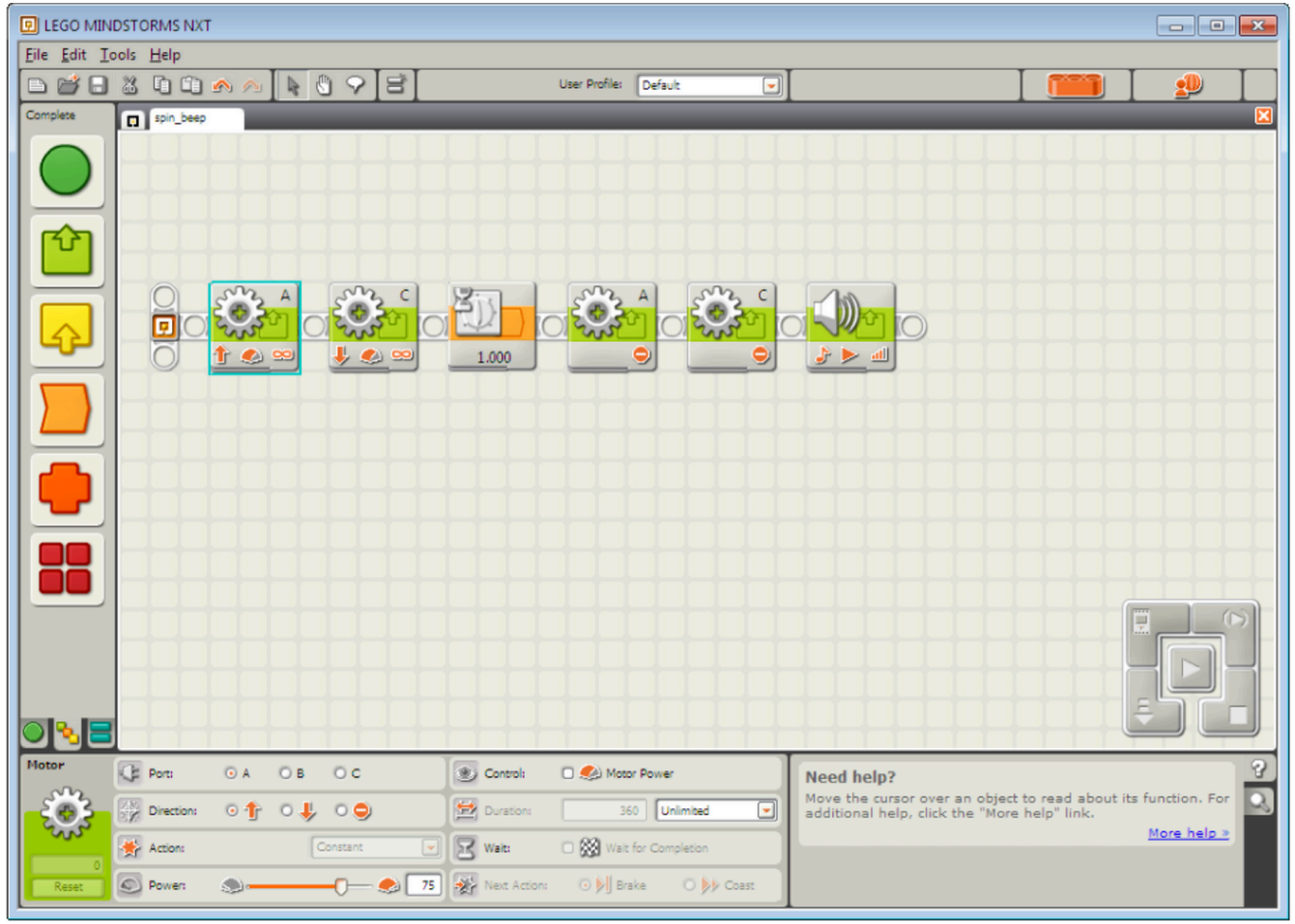
Mindstorms NXT

Mindstorms NXT

- Distance (U/S)
- Brightness
- Color
- Mic
- Bluetooth
- Gyro
- Compass
- PIR
- Camera
- Kit

Mindstorms NXT

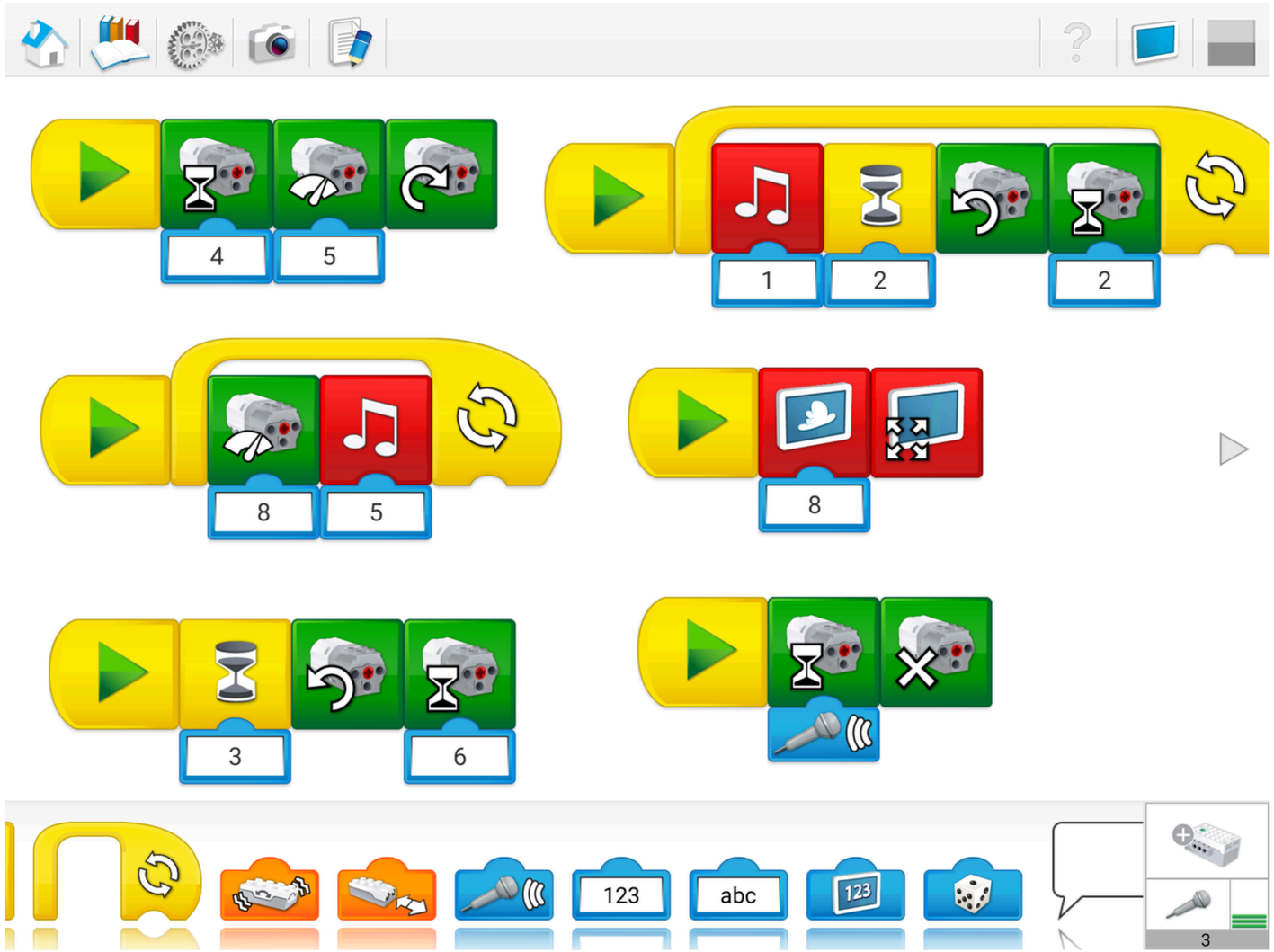
- Visual (default)
- Python
- NXC (C like)
- leJOS (Java like)
- MATLAB integration
- Assembly
- ....



WeDo (retired)

- Entry level
- Visual Programming
- Simple hardware
- STEM oriented
- 2 versions
  - 1.0 (‘09-’17)
  - 2.0 (‘16-’21)

WeDo



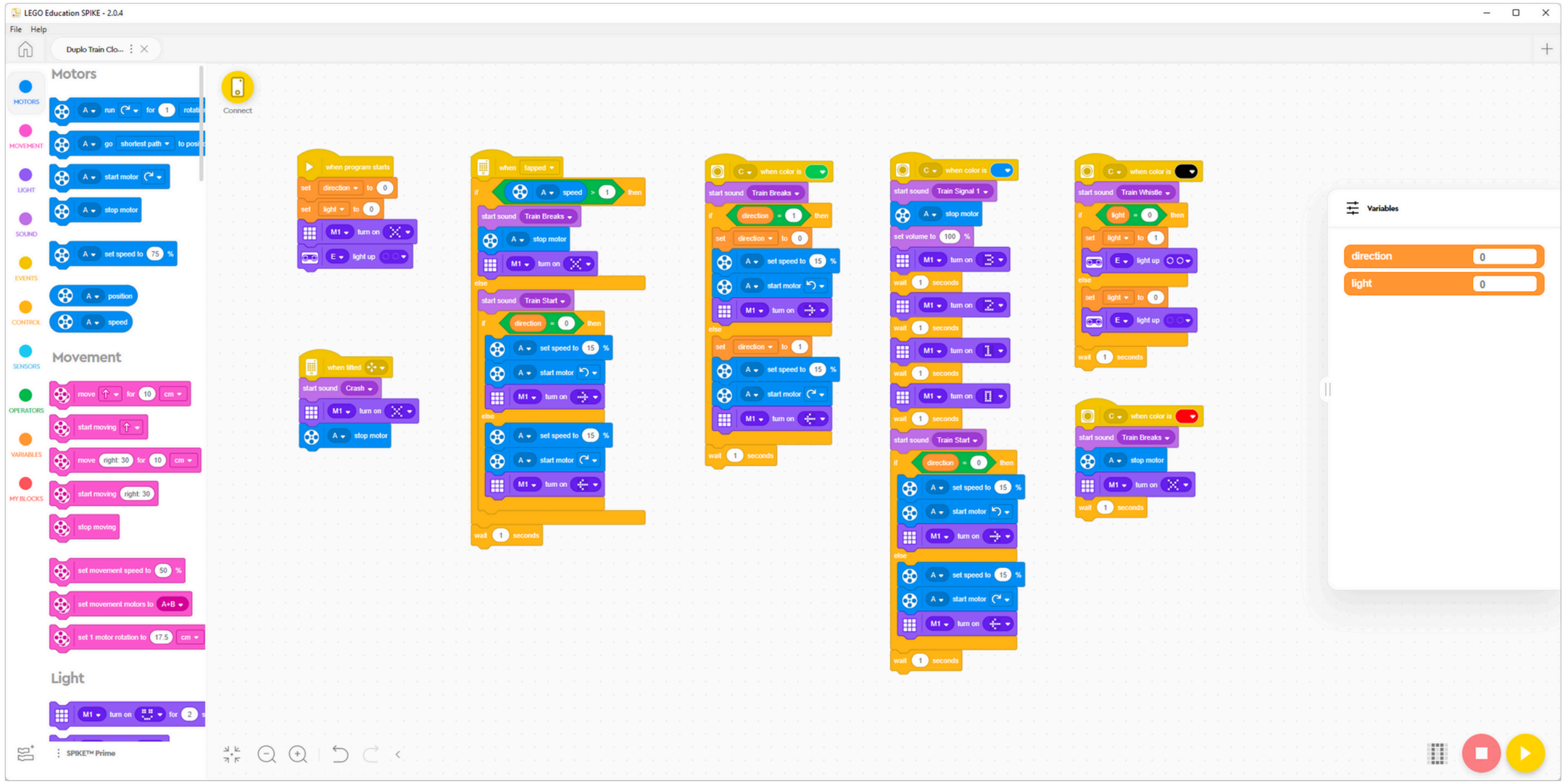
Spike

- Powerful
- Multiple sets
- Education-first
- Many sensors
- Visual
- Python
- ‘20-…

Spike Essential

Spike Prime

Spike


LEGO Education SPIKE - 2.0.4
File Help
Duplo Train Clo...
Connect
Motors
MOTORS
MOVEMENT
LIGHT
SOUND
EVENTS
CONTROL
SENSORS
OPERATORS
VARIABLES
MY BLOCKS
A run for 1 rotati
A go shortest path to posi
A start motor
A stop motor
A set speed to 75 %
A position
A speed
Movement
move for 10 cm
start moving
move right: 30 for 10 cm
start moving right: 30
stop moving
set movement speed to 50 %
set movement motors to A+B
set 1 motor rotation to 17.5 cm
Light
M1 turn on for 2
SPIKE™ Prime
when program starts
set direction to 0
set light to 0
M1 turn on
E light up
when tilted
start sound Crash
M1 turn on
A stop motor
when tapped
if A speed > 1 then
start sound Train Breaks
A stop motor
M1 turn on
else
start sound Train Start
if direction = 0 then
A set speed to 15 %
A start motor
M1 turn on
else
A set speed to 15 %
A start motor
M1 turn on
wait 1 seconds
C when color is
start sound Train Breaks
if direction = 1 then
set direction to 0
A set speed to 15 %
A start motor
M1 turn on
else
set direction to 1
A set speed to 15 %
A start motor
M1 turn on
wait 1 seconds
C when color is
start sound Train Signal 1
A stop motor
set volume to 100 %
M1 turn on
wait 1 seconds
M1 turn on
wait 1 seconds
M1 turn on
wait 1 seconds
M1 turn on
wait 1 seconds
start sound Train Start
if direction = 0 then
A set speed to 15 %
A start motor
M1 turn on
else
A set speed to 15 %
A start motor
M1 turn on
wait 1 seconds
C when color is
start sound Train Whistle
if light = 0 then
set light to 1
E light up
else
set light to 0
E light up
wait 1 seconds
C when color is
start sound Train Breaks
A stop motor
M1 turn on
wait 1 seconds
Variables
direction 0
light 0

Mindstorms Robot Inventor

- Powerful
- Based on Spike
- Program & control
- Retired (‘20-’22)

DEMO TIME

Benefits

- STEM oriented
- One-stop app
- Build - Program - Refine
- Different levels
- Resources
- Collaborative work
- Learn by doing
- Creativity w/o limits

THANK YOU

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