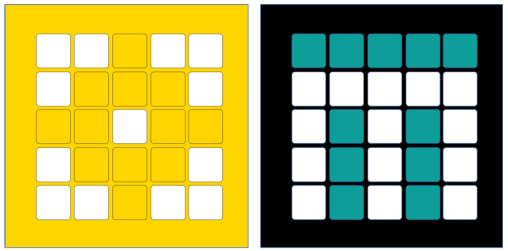
PRIME LESSONS

By the Makers of EV3Lessons



INTRODUCTION TO FORCE SENSOR

BY SANJAY AND ARVIND SESHAN

This lesson uses SPIKE 3 software

LESSON OBJECTIVES

Learn how to use the Force Sensor

Note: Force Sensor does not come with Robot Inventor. However, the python environment for Robot Inventor does support the sensor.

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WHAT IS A FORCE SENSOR?

The Force Sensor does two main types of sensing:

- Touch sensing
- Force sensing

You can measure the Force in deciNewtons

The following methods are available

```
.force()
.pressed()
.raw()
```

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HOW DO YOU PROGRAM WITH A FORCE SENSOR

Import the force sensor module

```
import force_sensor
```

Query the force

```
force_sensor.force(port.F)
```

Port

Query the pressed state (true or false)

```
force_sensor.pressed(port.F)
```

Waiting until pressed/released:

```
await runloop.until(<function that checks pressed/not pressed>)
```

or using while loops...

```
while (not force_sensor.pressed()): pass
while (force_sensor.pressed()): pass
```

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CHALLENGE 1: MOVE UNTIL PRESSED

Program your robot to move straight until you press the sensor with your hand

Basic steps**:**

Write a "force_sensor_pressed" function that returns true if the sensor is pressed

Start **moving straight**

Await the force_sensor_pressed function

Stop moving

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CHALLENGE 1: SOLUTION

```
from hub import port
import runloop, force_sensor, motor_pair, sys

# Function that returns true if the force sensor is pressed
def force_sensor_pressed():
    return force_sensor.pressed(port.F)

async def main():
    # Set up the pair and start moving
    motor_pair.pair(motor_pair.PAIR_1, port.C, port.D)
    motor_pair.move(motor_pair.PAIR_1, 0)
    # wait until pressed
    await runloop.until(force_sensor_pressed)
    # stop and exit
    motor_pair.stop(motor_pair.PAIR_1)
    sys.exit("Done")

runloop.run(main())
```

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CREDITS

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

Additional contributions by FLL Share & Learn community members

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