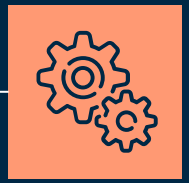
Pi-Top Workshop #2

Introduction to Programming
Pi-Tops in Python and using
the vision sensor

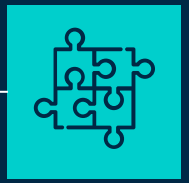
Workshop #1 Agenda



01

PYTHON

Learn to code Pi-Tops with Python.



02

VISION SENSOR

Program the vision sensor and attempt the challenge.

SETTING UP PYTHON

```
 3 from pitop import Pitop
 4 from pitop.robotics.drive_controller import DriveController
 5 from time import sleep
 6
 7 robot = Pitop()
 8 # Notice that the objects in our code, match the physical object itself
   (the robot)
 9 drive = DriveController(left_motor_port="M3", right_motor_port="M0")
10 robot.add_component(drive)
```

FORWARD

```
11
12 robot.drive.forward(0.5)
13 sleep(0.25)
14
15 robot.drive.stop()
```

Remember

- The variable for robot.drive.forward changes speed
- The variable for sleep changes distance

REVERSE

```
11
12 robot.drive.forward(-0.5)
13 sleep(0.25)
14
15 robot.drive.stop()
```

Remember

- Making the variable for robot.drive.forward to negative makes the robot move in reverse

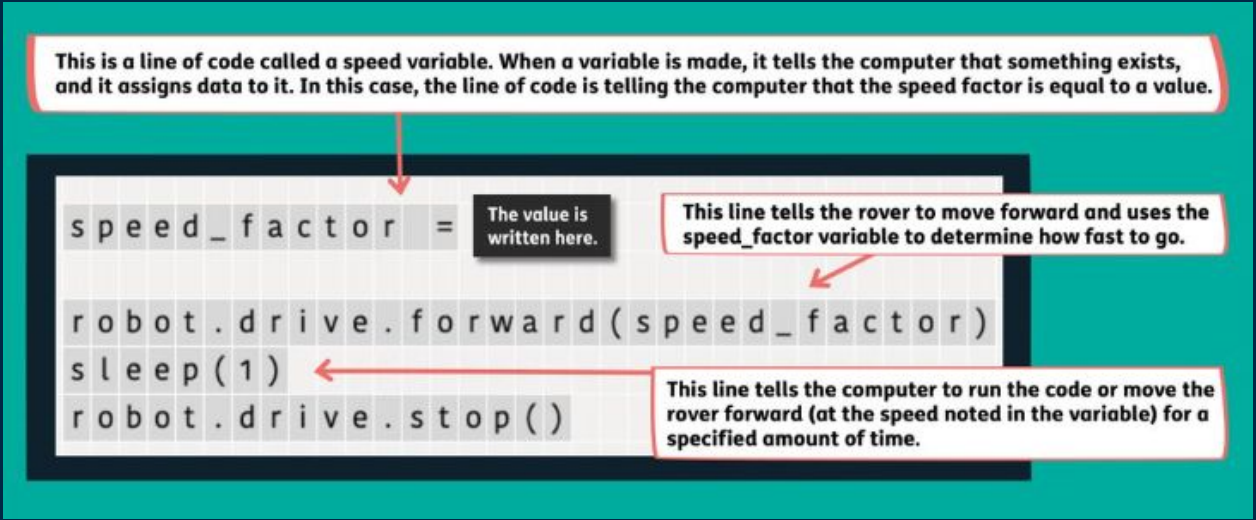
CHANGING SPEED

```
12 robot.drive.forward (speed_factor = 0.5)
13
14 sleep(2)
15 robot.drive.stop()
```

- Speed is changed by changing the value for “robot.drive.forward (speed_factor = …)”

CHANGING SPEED

Explanation



TURNING RIGHT

```
12 #***** Loop *****
13 while True:
14     robot.drive.right(0.1)
15     sleep(0.1)
```

TURNING LEFT

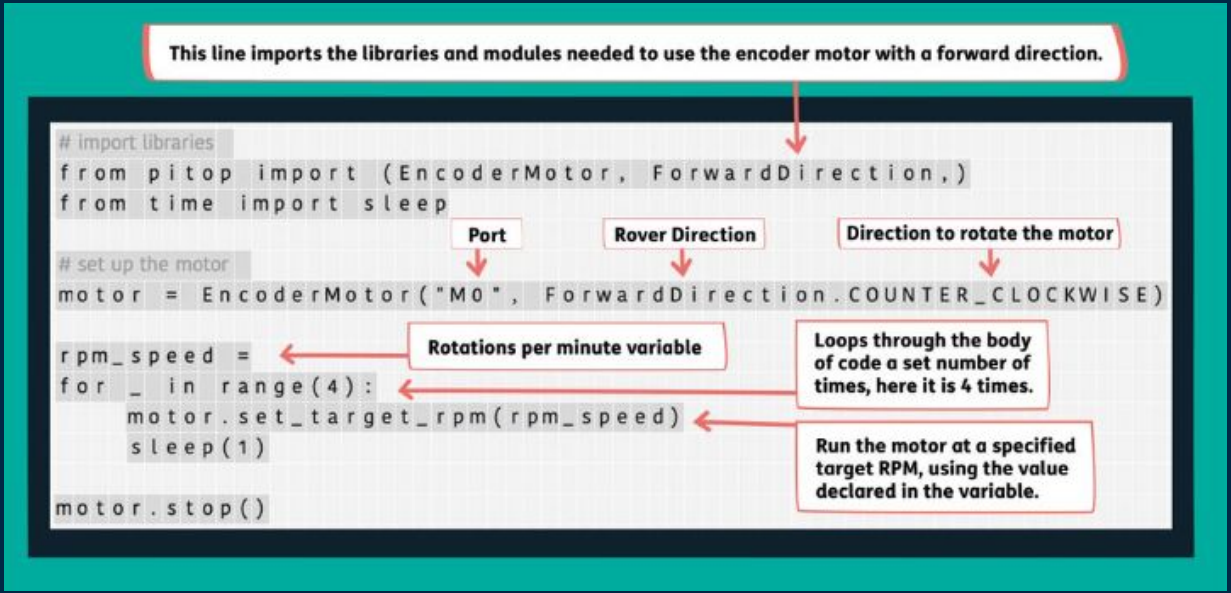
```
12 #***** Loop *****
13 while True:
14     robot.drive.left(0.1)
15     sleep(0.1)
```

CHANGING RPM

```
# Setup the motor
motor = EncoderMotor("M0", ForwardDirection.COUNTER_CLOCKWISE)

rpm_speed =
for _ in range(4):
    motor.set_target_rpm(rpm_speed)
    sleep(1)

motor.stop()

```

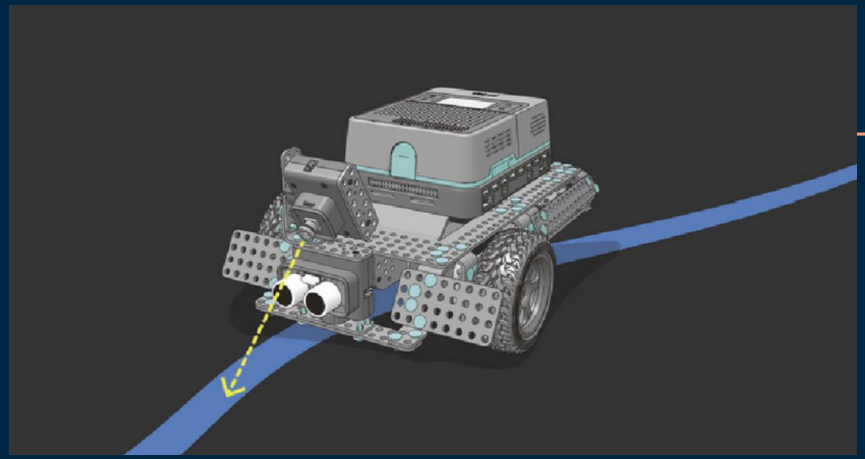
CHANGING RPM

Explanation



VISION CHALLENGE

Objective: modify the program to have the robot use the vision sensor to follow the colored path.



Go to:

1. Robot Vision

https://further.pi-top.com/courses/60e453caa648150015a9cd23/challenges/606cb169aa58a40014b0066a

2. Path Finder

https://further.pi-top.com/courses/60e453caa648150015a9cd23