

LEGO® Education SPIKE™ Principal

Programmes Python
Exemples de solution

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Au secours !

<https://education.lego.com/fr-fr/lessons/prime-invention-squad/help>



```
from spike import PrimeHub, App, ColorSensor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
app = App()
color_sensor = ColorSensor('B')
```

```
# Voici l'histoire n°1 : Kiki va se promener. Elle est dehors, toute heureuse, jusqu'à ce que...
hub.left_button.wait_until_pressed()
```

```
color_sensor.wait_until_color('blue')
app.play_sound('Traffic')
```

```
color_sensor.wait_until_color('yellow')
app.play_sound('Ring Tone')
```

```
color_sensor.wait_until_color('green')
app.play_sound('Dog Bark 1')
app.play_sound('Dog Bark 1')
```

```
# Voici l'histoire n°2 :
hub.right_button.wait_until_pressed()
```

```
color_sensor.wait_until_color('blue')
app.play_sound('Door Knock')
```

```
color_sensor.wait_until_color('yellow')
app.play_sound('Glass Breaking')
```

```
color_sensor.wait_until_color('green')
app.play_sound('Dog Bark 3')
```

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Course de sauterelles

<https://education.lego.com/fr-fr/lessons/prime-invention-squad/hopper-race>



```
from spike import PrimeHub, MotorPair
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
hop_motors = MotorPair('E', 'F')
```

```
hop_motors.set_default_speed(50)
```

```
hub.light_matrix.write('3')
wait_for_seconds(1)
```

```
hub.light_matrix.write('2')
wait_for_seconds(1)
```

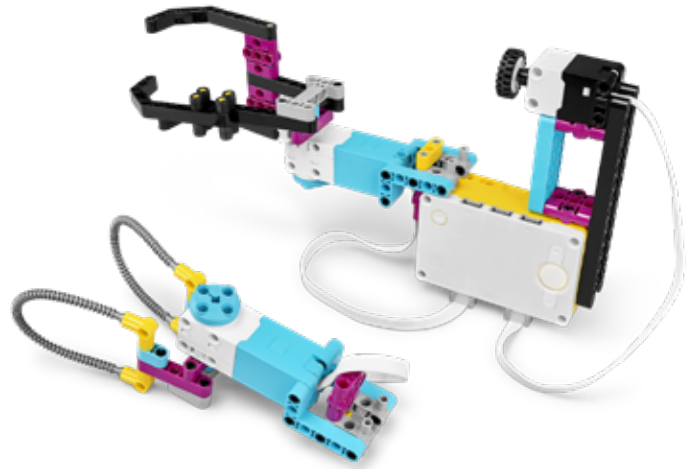
```
hub.light_matrix.write('1')
wait_for_seconds(1)
```

```
# Ajuste le paramètre des blocs pour modifier la distance que parcourra ta sauterelle.
# -----v
hop_motors.move(10, 'seconds')
```

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Super nettoyeur

<https://education.lego.com/fr-fr/lessons/prime-invention-squad/super-cleanup>



```
from spike import ForceSensor, Motor
```

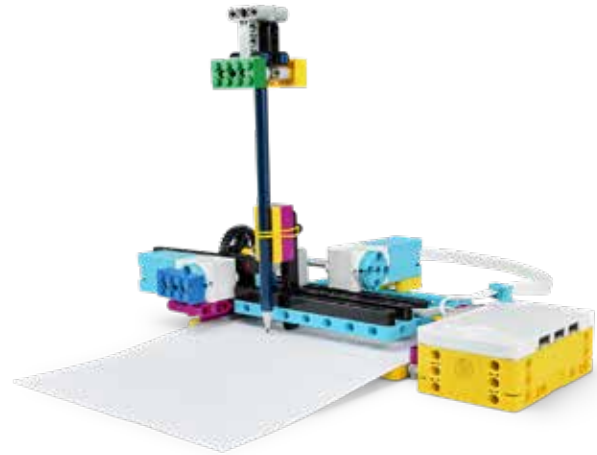
```
force_sensor = ForceSensor('E')  
grabber_motor = Motor('A')
```

```
while True:  
    force_sensor.wait_until_pressed()  
    grabber_motor.set_stall_detection(False)  
    grabber_motor.start(-75)  
  
    force_sensor.wait_until_released()  
    grabber_motor.set_stall_detection(True)  
    grabber_motor.start(75)
```

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Hors service

<https://education.lego.com/fr-fr/lessons/prime-invention-squad/broken>



```
from spike import PrimeHub, Motor
from spike.control import wait_for_seconds
hub = PrimeHub()
x_motor = Motor('A')
y_motor = Motor('C')
```

```
hub.left_button.wait_until_pressed()
x_motor.set_default_speed(-100)
x_motor.run_for_seconds(1.5)
wait_for_seconds(1)
```

Ces lignes doivent « découper » un carré.

```
x_motor.set_default_speed(100)
y_motor.set_default_speed(100)
x_motor.run_for_degrees(400)
y_motor.run_for_degrees(575)
x_motor.run_for_degrees(-400)
y_motor.run_for_degrees(-575)
```

```
hub.right_button.wait_until_pressed()
x_motor.set_default_speed(100)
x_motor.run_for_seconds(1.5)
```

```
wait_for_seconds(1)
```

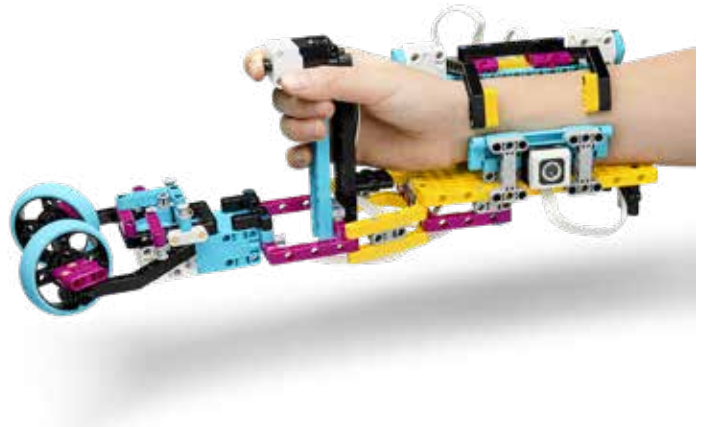
Ces lignes doivent « découper » un rectangle.

```
x_motor.run_for_degrees(-60)
x_motor.run_for_degrees(-400)
y_motor.run_for_degrees(-800)
x_motor.run_for_degrees(400)
y_motor.run_for_degrees(800)
```

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Design personnalisé

<https://education.lego.com/fr-fr/lessons/prime-invention-squad/design-for-someone>



```
from spike import PrimeHub, Motor, ForceSensor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
motor_a = Motor('A')
motor_e = Motor('E')
force_sensor = ForceSensor('B')
```

```
motor_a.set_default_speed(100)
motor_e.set_default_speed(-100)
motor_a.set_stall_detection(False)
motor_e.set_stall_detection(False)
motor_a.set_stop_action('hold')
motor_e.set_stop_action('hold')
```

```
motor_a.run_to_position(0)
hub.speaker.beep(60)
hub.speaker.beep(72)
```

```
# fais en sorte que la prothèse s'accroche au bras de quelqu'un
motor_a.run_for_seconds(1)
motor_e.run_for_seconds(1)
```

```
while True:
    if hub.right_button.was_pressed():
        # fais lâcher la prothèse
        motor_a.run_to_position(0)
        motor_e.run_to_position(0)
        break

    if force_sensor.get_force_newton() > 5:
        hub.light_matrix.show_image('SQUARE')
    else:
        hub.light_matrix.off()

    wait_for_seconds(0.01)
```

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Passez votre commande

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/place-your-order>



```
from spike import PrimeHub, App, ColorSensor, DistanceSensor, Motor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
app = App()
distance_sensor = DistanceSensor('C')
color_sensor = ColorSensor('D')
arm_motor = Motor('A')
base_motor = Motor('F')
```

```
arm_motor.set_default_speed(50)
base_motor.set_default_speed(50)
```

```
arm_motor.run_to_position(350)
base_motor.run_to_position(350)
```

```
app.start_sound('Connect')
distance_sensor.light_up_all()
```

```
for x in range(10):
    hub.light_matrix.show_image('HEART')
    wait_for_seconds(0.5)
    hub.light_matrix.show_image('HEART_SMALL')
    wait_for_seconds(0.5)
```

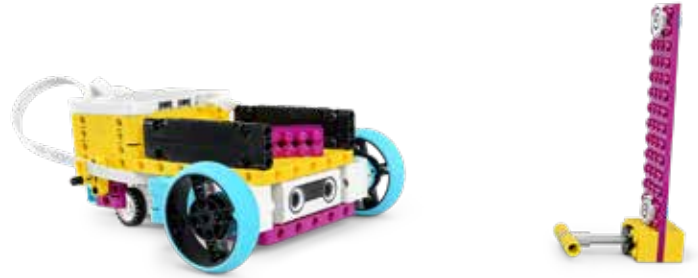
```
hub.light_matrix.show_image('HEART')
```

```
while True:
    color_sensor.wait_until_color('violet')
    arm_motor.run_for_degrees(30)
    arm_motor.run_for_degrees(-60)
    arm_motor.run_for_degrees(60)
    arm_motor.run_for_degrees(-30)
    app.start_sound('Connect')
    hub.light_matrix.show_image('HEART')
```

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Ça bugge !

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/out-of-order>



```

from spike import PrimeHub, DistanceSensor, Motor, MotorPair
from spike.control import wait_for_seconds

hub = PrimeHub()
distance_sensor = DistanceSensor('B')
drive_motors = MotorPair('A', 'E')
small_wheel_motor = Motor('C')

small_wheel_motor.set_default_speed(100)
drive_motors.set_default_speed(50)

hub.left_button.wait_until_pressed()
# Il s'agit d'un moyen de déboguer le premier programme.
small_wheel_motor.run_to_position(0)
drive_motors.start()
# ajuste la valeur ici -----v
distance_sensor.wait_for_distance_closer_than(15, DistanceSensor.CM)
drive_motors.stop()

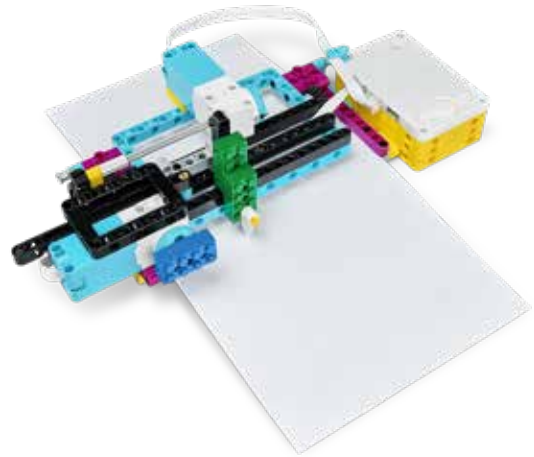
hub.right_button.wait_until_pressed()
# Il s'agit d'un moyen de déboguer le deuxième programme.
small_wheel_motor.run_to_position(0)
drive_motors.start()
# ajuste la valeur ici -----v
distance_sensor.wait_for_distance_closer_than(15, DistanceSensor.CM)
drive_motors.stop()
# ajuste la valeur ici -----v
small_wheel_motor.run_to_position(20)
wait_for_seconds(1)
drive_motors.move(-50, DistanceSensor.CM)
drive_motors.stop()
small_wheel_motor.run_to_position(0)
wait_for_seconds(1)
# ajuste la valeur ici
# -----v
drive_motors.move(50, DistanceSensor.CM)
drive_motors.stop()

```


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Suivi de colis

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/track-your-packages>



```

from spike import PrimeHub, Motor
from spike.control import wait_for_seconds

hub = PrimeHub()
horizontal_motor = Motor('A')
vertical_motor = Motor('C')

horizontal_motor.set_default_speed(75)
vertical_motor.set_default_speed(75)

# Ce programme permet d'assurer le suivi de ton colis sur la carte n°1.

hub.left_button.wait_until_pressed()
horizontal_motor.run_for_seconds(1)
wait_for_seconds(1)

vertical_motor.run_for_degrees(475)
horizontal_motor.run_for_degrees(-545)
vertical_motor.run_for_degrees(950)
horizontal_motor.run_for_degrees(550)
vertical_motor.run_for_degrees(380)

# exécute les deux moteurs en même temps pour te déplacer en diagonale
vertical_motor.start(speed=75)
horizontal_motor.run_for_degrees(-540, speed=50)
vertical_motor.stop()

vertical_motor.run_for_degrees(175)

```

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Sécurité

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/keep-it-safe>



```
from spike import PrimeHub, Motor, LightMatrix
from spike.control import wait_for_seconds, wait_until
from spike.operator import greater_than
```

```
hub = PrimeHub()
lock_motor = Motor('C')
dial_motor = Motor('B')
lock_motor.set_default_speed(50)
```

```
hub.speaker.beep(60)
hub.speaker.beep(72)
```

```
# Cette action verrouille la porte.
dial_motor.set_stop_action('coast')
dial_motor.run_to_position(0)
dial_motor.set_degrees_counted(0)
hub.light_matrix.show_image('NO')
```

```
# Cette action permet de déverrouiller la porte lorsque le bouton gauche de la plateforme est enfoncé.
```

```
hub.left_button.wait_until_pressed()
hub.speaker.beep(72)
wait_until(dial_motor.get_degrees_counted, greater_than, 180)
hub.speaker.beep(60)
lock_motor.run_for_seconds(1)
hub.light_matrix.show_image('NO')
wait_for_seconds(2)
hub.light_matrix.show_image('YES')
wait_for_seconds(5)
```

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En toute sécurité !

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/keep-it-really-safe>



```
from spike import PrimeHub, App, Motor
from spike.control import Timer, wait_for_seconds
```

```
hub = PrimeHub()
app = App()
dial = Motor('B')
lock = Motor('C')
dial_cover = Motor('E')
timer = Timer()
```

```
dial.set_default_speed(75)
lock.set_default_speed(75)
dial_cover.set_default_speed(75)
```

```
def unlock():
```

```
while not hub.left_button.is_pressed() and dial.get_degrees_counted() < 180:
    hub.speaker.beep(60)
    dial_cover.run_for_degrees(15)
    wait_for_seconds(0.8)
```

```
    if timer.now() > 5:
        app.play_sound('Bonk')
        return
```

```
    hub.light_matrix.show_image('NO')
    wait_for_seconds(2)
    hub.light_matrix.show_image('YES')
    dial_cover.run_to_position(0)
    lock.run_for_seconds(1)
    app.play_sound('Wand')
    wait_for_seconds(5)
```

Cette action permet de déverrouiller la porte et d'activer le mécanisme de protection supplémentaire.

```
hub.speaker.beep(60)
hub.speaker.beep(72)
lock.run_for_seconds(-1)
dial.run_to_position(0)
dial_cover.run_to_position(0)
dial.set_degrees_counted(0)
dial.set_stop_action('coast')
hub.light_matrix.show_image('NO')
timer.reset()
unlock()
```

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Un assistant automatisé

<https://education.lego.com/fr-fr/lessons/prime-kickstart-a-business/automate-it>



```
from spike import App, Motor, ColorSensor
from spike.control import wait_for_seconds
```

```
app = App()
base_motor = Motor('A')
arm_motor = Motor('F')
color_sensor = ColorSensor('D')
```

```
base_motor.set_default_speed(25)
arm_motor.set_default_speed(25)
```

```
def check_color():
    # Cette action permet de vérifier la couleur du colis.
    arm_motor.run_to_position(235)
    wait_for_seconds(4)
    if color_sensor.get_color() == 'violet':
        base_motor.run_to_position(0)
        arm_motor.run_to_position(25)
        app.play_sound('Triumph')
        arm_motor.run_to_position(240)
    else:
        app.play_sound('Oops')
        arm_motor.run_to_position(25)
        for x in range(3):
            arm_motor.run_for_degrees(-100, speed=100)
            arm_motor.run_for_degrees(100, speed=100)
```

```
# Cette action permet d'activer le robot et de lui faire prendre un colis de chaque côté.
```

```
base_motor.run_to_position(0)
arm_motor.run_to_position(240)
```

```
base_motor.run_to_position(90)
arm_motor.run_to_position(25)
```

```
check_color()
```

```
base_motor.run_to_position(0)
arm_motor.run_to_position(240)
base_motor.run_to_position(270)
arm_motor.run_to_position(25)
```

```
check_color()
```

```
base_motor.run_to_position(0)
arm_motor.run_to_position(240)
```

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Break dance

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/break-dance>



La leçon Break dance a été créée pour notre langage de programmation de blocs de mots. Il n'est actuellement pas possible d'utiliser exactement le même déroulement de la leçon en utilisant notre programmation Python.

Voici un programme qui fera au moins bouger votre modèle !

```
from spike import PrimeHub, Motor, ColorSensor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
leg_motor = Motor('F')
arm_motor = Motor('B')
color_sensor = ColorSensor('D')
```

```
leg_motor.set_default_speed(-80)
arm_motor.set_default_speed(-80)
```

```
leg_motor.run_to_position(0)
arm_motor.run_to_position(0)
wait_for_seconds(1)
```

```
for x in range(10):
    hub.light_matrix.write("1")
    leg_motor.start()
    arm_motor.run_for_rotations(1)
    leg_motor.stop()
    wait_for_seconds(0.45)
```

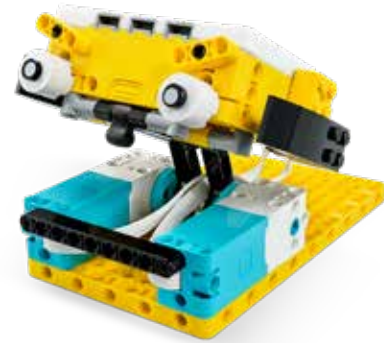
```
    hub.light_matrix.write("2")
    leg_motor.start()
    arm_motor.run_for_rotations(1)
    leg_motor.stop()
    wait_for_seconds(0.45)
```

```
    hub.light_matrix.write("3")
    leg_motor.start()
    arm_motor.run_for_rotations(1)
    leg_motor.stop()
    wait_for_seconds(0.45)
```

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Action répétée 5 fois

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/repeat-5-times>



```

from spike import PrimeHub, App, Motor
from spike.control import wait_until, wait_for_seconds
from spike.operator import equal_to

hub = PrimeHub()
app = App()
left_leg_motor = Motor('B')
right_leg_motor = Motor('F')
left_leg_motor.set_default_speed(50)
right_leg_motor.set_default_speed(-50)
left_leg_motor.start()
right_leg_motor.start()

wait_until(hub.motion_sensor.get_orientation, equal_to, 'leftside')
right_leg_motor.stop()
left_leg_motor.stop()

app.play_sound('Sport Whistle 1')

for count in range(5):
    left_leg_motor.set_default_speed(-50)
    right_leg_motor.set_default_speed(50)
    left_leg_motor.start()
    right_leg_motor.start()
    wait_until(hub.motion_sensor.get_orientation, equal_to, 'front')
    right_leg_motor.stop()
    left_leg_motor.stop()
    app.start_sound('Male Jump 1')
    hub.light_matrix.write(count + 1)
    wait_for_seconds(0.5)
    left_leg_motor.set_default_speed(50)
    right_leg_motor.set_default_speed(-50)
    left_leg_motor.start()
    right_leg_motor.start()
    wait_until(hub.motion_sensor.get_orientation, equal_to, 'leftside')
    right_leg_motor.stop()
    left_leg_motor.stop()
    wait_for_seconds(0.5)

app.play_sound('Sport Whistle 2')

```

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Prévisions météo

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/rain-or-shine>



Pluie ou grand soleil ? Cette leçon a été créée pour notre langage de programmation de blocs de mots. Il n'est actuellement pas possible d'utiliser les fonctions de prévision météorologique avec notre programmation Python.

Voici un programme qui fera bouger les prévisions météo !

```

from spike import PrimeHub, App, Motor
from spike.control import wait_for_seconds

hub = PrimeHub()
app = App()
umbrella_motor = Motor("B")
glasses_motor = Motor("F")
YOUR_LOCAL_FORECAST = "sunny"

umbrella_motor.set_default_speed(100)
glasses_motor.set_default_speed(100)

# Cette action permet de positionner le robot dans la bonne position de départ
umbrella_motor.run_to_position(45)
glasses_motor.run_to_position(300)

hub.speaker.beep(60, seconds=0.1)
hub.speaker.beep(72, seconds=0.1)

if YOUR_LOCAL_FORECAST == "sunny":
    # si le soleil brille, mets des lunettes de soleil
    glasses_motor.run_to_position(0)
    hub.light_matrix.show_image("SQUARE")
    wait_for_seconds(2)
    glasses_motor.run_to_position(300)
elif YOUR_LOCAL_FORECAST == "rainy":
    # ou s'il pleut, prends ton parapluie
    umbrella_motor.run_to_position(340)
    app.play_sound("Rain")
    umbrella_motor.run_to_position(45)
else:
    # sinon, montrer X
    hub.light_matrix.show_image("N0")

```

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La vitesse du vent

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/wind-speed>



La leçon La vitesse du vent a été créée pour notre langage de programmation de blocs de mots. Il n'est actuellement pas possible d'utiliser les fonctions de prévision météorologique avec notre programmation Python.

Voici un programme qui fera au moins bouger votre modèle !

```
from spike import App, Motor
from spike.control import wait_for_seconds
```

```
tilt_motor = Motor("A")
WIND_SPEED_FORECAST = 8
```

```
tilt_motor.set_default_speed(20)
tilt_motor.run_to_position(5)
```

```
if WIND_SPEED_FORECAST < 5.5:
    tilt_motor.run_for_degrees(30)
    wait_for_seconds(1)
    tilt_motor.run_for_degrees(-30)
else:
    tilt_motor.run_for_degrees(60)
    wait_for_seconds(1)
    tilt_motor.run_for_degrees(-60)
```


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Pour l'amour des tomates

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/veggie-love>



La leçon Pour l'amour des tomates a été créée pour notre langage de programmation de blocs de mots. Il n'est actuellement pas possible d'utiliser les fonctions de prévision météorologique avec notre programmation Python.

Voici un programme qui fera au moins bouger votre modèle !

```
from spike import PrimeHub, App, Motor

hub = PrimeHub()
app = App()
pointer_motor = Motor("E")
pointer_motor.set_default_speed(-50)

WEEK_RAIN = 50
ROTATION = 0

hub.left_button.wait_until_pressed()
pointer_motor.run_for_seconds(2)
pointer_motor.set_degrees_counted(0)
pointer_motor.set_default_speed(50)
pointer_motor.run_for_seconds(2)
hub.light_matrix.write(abs(pointer_motor.get_degrees_counted()))
rotation = int(week_rain * abs(pointer_motor.get_degrees_counted()) / 60)
print(ROTATION)

hub.right_button.wait_until_pressed()
pointer_motor.set_degrees_counted(0)
pointer_motor.set_default_speed(-50)
pointer_motor.run_for_degrees(ROTATION)
hub.light_matrix.write(WEEK_RAIN)
print(WEEK_RAIN)
```

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Casse-tête

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/brain-game>



```
from spike import PrimeHub, App, Motor, ColorSensor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
app = App()
mouth_motor = Motor('A')
color_sensor = ColorSensor('B')
candy1 = []
candy2 = []
```

```
while True:
    hub.left_button.wait_until_pressed()

    # Le Maître du jeu mangera alors le bonbon, puis
    lira et enregistrera sa séquence de couleurs dans la
    liste nommée « Bonbon 1 »
    hub.light_matrix.off()
    candy1.clear()
    mouth_motor.set_default_speed(-50)
    mouth_motor.run_for_seconds(2)
    app.play_sound('Bite')
    app.play_sound('Bite')
```

```
for x in range(5):
    candy1.append(color_sensor.get_color())
    wait_for_seconds(1)
    mouth_motor.set_default_speed(50)
    mouth_motor.run_for_degrees(95)
    wait_for_seconds(1)
```

```
hub.right_button.wait_until_pressed()
```

```
# Le Maître du jeu mangera alors le bonbon, puis
lira et enregistrera sa séquence de couleurs dans la
liste nommée « Bonbon 2 »
```

```
candy2.clear()
mouth_motor.set_default_speed(-50)
mouth_motor.run_for_seconds(2)
app.play_sound('Bite')
app.play_sound('Bite')
```

```
for x in range(5):
    candy2.append(color_sensor.get_color())
```

```
wait_for_seconds(1)
mouth_motor.set_default_speed(50)
mouth_motor.run_for_degrees(95)
wait_for_seconds(1)

# Cette action permet d'éclairer la position de la
bricole rouge si elle se trouve au même endroit sur les
deux bonbons.
candy1_red_index = candy1.index('red')
candy2_red_index = candy2.index('red')
for x in range(5):
    print(candy1[x])

if candy1_red_index == candy2_red_index:
    for x in range(5):
        hub.light_matrix.set_pixel(x, candy1_red_
index)
        app.play_sound('Win')
else:
    app.play_sound('Oops')
```

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Le coach

<https://education.lego.com/fr-fr/lessons/prime-life-hacks/the-coach>



```
from spike import Motor
from spike.control import Timer, wait_for_seconds

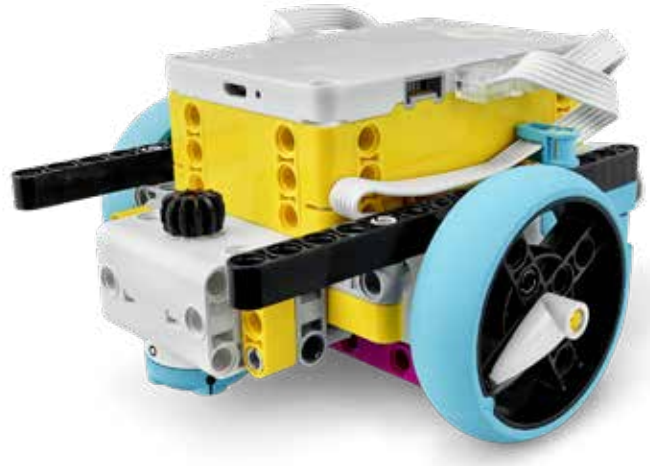
left_leg_motor = Motor('F')
right_leg_motor = Motor('B')
timer = Timer()
left_leg_motor.run_to_position(0)
right_leg_motor.run_to_position(0)

while True:
    while timer.now() < 5:
        left_leg_motor.start_at_power(-80)
        right_leg_motor.start_at_power(80)
        wait_for_seconds(0.1)
        left_leg_motor.start_at_power(80)
        right_leg_motor.start_at_power(-80)
        wait_for_seconds(0.1)
```

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Stage de préparation 1 :

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/training-camp-1-driving-around>



```
from spike import MotorPair
from spike.control import wait_for_seconds

drive_motors = MotorPair('C', 'D')

drive_motors.set_default_speed(30)
drive_motors.set_motor_rotation(17.5, 'cm')

wait_for_seconds(1)

for x in range(4):
    drive_motors.move(10, 'cm')
    wait_for_seconds(0.5)
    drive_motors.move(182, 'degrees', steering=100)
```

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Stage de préparation 2 :

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/training-camp-2-playing-with-objects>



```
from spike import PrimeHub, MotorPair, Motor, DistanceSensor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
drive_motors = MotorPair('C', 'D')
grabber_motor = Motor('E')
distance_sensor = DistanceSensor('F')
```

```
drive_motors.set_default_speed(30)
drive_motors.set_motor_rotation(17.5, 'cm')
grabber_motor.set_default_speed(-20)
grabber_motor.run_for_seconds(1)
grabber_motor.set_default_speed(20)
grabber_motor.run_for_degrees(75)
```

```
hub.speaker.beep(60)
hub.speaker.beep(72)
```

```
hub.right_button.wait_until_pressed()
```

```
wait_for_seconds(1)
```

```
drive_motors.start()
distance_sensor.wait_for_distance_closer_than(10, 'cm')
drive_motors.stop()
```

```
grabber_motor.run_for_degrees(-75)
```

```
hub.speaker.beep(60)
hub.speaker.beep(72)
```

```
drive_motors.move(-20, 'cm')
```

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Stage de préparation 3 :

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/training-camp-3-react-to-lines>



```
from spike import PrimeHub, MotorPair, ColorSensor
from spike.control import wait_for_seconds

hub = PrimeHub()
drive_motors = MotorPair('C', 'D')
color_sensor = ColorSensor('B')

drive_motors.set_default_speed(50)
POWER = 50

while True:
    if hub.left_button.was_pressed():
        drive_motors.start()
        color_sensor.wait_until_color('black')
        drive_motors.stop()

    if hub.right_button.was_pressed():
        while True:
            drive_motors.start_tank_at_power(0, POWER)
            color_sensor.wait_until_color('black')
            drive_motors.start_tank_at_power(POWER, 0)
            color_sensor.wait_until_color('white')
```

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Assemblage d'une structure motrice avancée

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/assembling-an-advanced-driving-base>



```
from spike import PrimeHub, MotorPair
from spike.control import wait_for_seconds, wait_until
from spike.operator import greater_than, less_than

hub = PrimeHub()
drive_motors = MotorPair('A', 'E')

drive_motors.set_default_speed(50)
drive_motors.set_motor_rotation(27.63, 'cm')

wait_for_seconds(1)

drive_motors.move(20, 'cm')
drive_motors.move(-20, 'cm')

drive_motors.move(20, 'cm', steering=-40)

hub.motion_sensor.reset_yaw_angle()

drive_motors.start(steering=100)
wait_until(hub.motion_sensor.get_yaw_angle, greater_than, 90)
drive_motors.stop()

drive_motors.start(steering=-100)
wait_until(hub.motion_sensor.get_yaw_angle, less_than, 0)
drive_motors.stop()
```

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Mon code, notre programme

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/my-code-our-program>



```
from spike import PrimeHub, MotorPair
from spike.control import wait_for_seconds

hub = PrimeHub()
drive_motors = MotorPair('A', 'E')

drive_motors.set_default_speed(50)
drive_motors.set_motor_rotation(27.63, 'cm')

def square():
    for x in range(4):
        drive_motors.move(1.5, 'rotations')
        drive_motors.move(0.365, 'rotations', steering=100)

def triangle():
    for x in range(3):
        drive_motors.move(1.5, 'rotations')
        drive_motors.move(0.486, 'rotations', steering=100)

def circle():
    drive_motors.move(3, 'rotations', steering=60)

wait_for_seconds(1)

square()
hub.speaker.beep()

triangle()
hub.speaker.beep()

circle()
hub.speaker.beep()
```


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Vite, vite, une mise à jour !

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/time-for-an-upgrade>



```

from spike import PrimeHub, Motor

hub = PrimeHub()
lift_arm_motor = Motor('D')
dozer_blade_motor = Motor('C')

lift_arm_motor.set_default_speed(-100)
lift_arm_motor.run_for_seconds(1)
dozer_blade_motor.set_default_speed(-100)
dozer_blade_motor.run_for_seconds(1)

lift_arm_motor.set_default_speed(100)
lift_arm_motor.run_for_degrees(70)
dozer_blade_motor.set_default_speed(100)
dozer_blade_motor.run_for_degrees(70)
hub.beep()

lift_arm_motor.run_for_degrees(180)
lift_arm_motor.run_for_degrees(-180)
dozer_blade_motor.run_for_degrees(180)
dozer_blade_motor.run_for_degrees(-180)
hub.beep()

lift_arm_motor.run_for_degrees(180, speed=15)
lift_arm_motor.run_for_degrees(-180, speed=15)
dozer_blade_motor.run_for_degrees(180, speed=15)
dozer_blade_motor.run_for_degrees(-180, speed=15)

```

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Prêts pour le grand défi

<https://education.lego.com/fr-fr/lessons/prime-competition-ready/mission-ready>



```

from spike import Motor, MotorPair
from spike.control import wait_for_seconds

dozer_blade_motor = Motor('C')
lift_arm_motor = Motor('D')
drive_motors = MotorPair('A', 'E')

drive_motors.set_default_speed(25)
drive_motors.set_motor_rotation(27.63, 'cm')

dozer_blade_motor.start(-100)
lift_arm_motor.start(-100)
wait_for_seconds(1)
dozer_blade_motor.stop()
lift_arm_motor.stop()

dozer_blade_motor.run_for_degrees(70, speed=100)
lift_arm_motor.run_for_degrees(20, speed=100)

drive_motors.move(-2, 'cm')
drive_motors.move(10.5, 'cm')

dozer_blade_motor.run_for_degrees(180, speed=40)

drive_motors.move(-6, 'cm')

dozer_blade_motor.run_for_degrees(-180, speed=60)
dozer_blade_motor.run_for_degrees(180, speed=60)

drive_motors.move(7, 'cm')

dozer_blade_motor.run_for_degrees(-180, speed=60)

drive_motors.move(0.405, 'rotations', steering=-100)
drive_motors.move(60.5, 'cm', steering=-30)
drive_motors.move(34, 'cm')
drive_motors.move(32, 'cm', steering=-50)
drive_motors.move(17.5, 'cm')
drive_motors.move(0.415, 'rotations', steering=-100)
drive_motors.move(32, 'cm')

```

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Brique après brique

<https://education.lego.com/fr-fr/lessons/prime-extra-resources/pass-the-brick>



```
from spike import Motor, PrimeHub
```

```
hub = PrimeHub()
grabber_motor = Motor('F')
```

```
# Cette action permet d'ouvrir la main une fois pour démarrer.
grabber_motor.run_for_seconds(1)
```

```
while True:
```

```
    # Cette action permet de fermer la main lorsque tu appuies sur le bouton gauche de la plateforme.
    hub.left_button.wait_until_pressed()
    grabber_motor.set_stall_detection(False)
    grabber_motor.start(-75)
```

```
    # Cette action permet d'ouvrir la main lorsque tu relâches le bouton gauche de la plateforme.
    hub.left_button.wait_until_released()
    grabber_motor.set_stall_detection(True)
    grabber_motor.start(75)
```

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Des idées et des briques

<https://education.lego.com/fr-fr/lessons/prime-extra-resources/ideas-the-lego-way>



```
from spike import PrimeHub
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
```

```
while True:
```

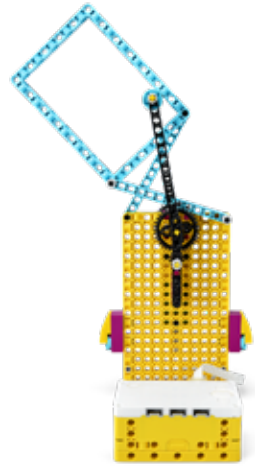
```
    if hub.left_button.was_pressed():
        hub.light_matrix.write('3')
        wait_for_seconds(1)
        hub.light_matrix.write('2')
        wait_for_seconds(1)
        hub.light_matrix.write('1')
        wait_for_seconds(1)
        hub.light_matrix.off()
        hub.speaker.beep(60, 0.5)
        hub.speaker.beep(72, 0.5)
```

```
    if hub.right_button.was_pressed():
        hub.light_matrix.write('5')
        wait_for_seconds(60)
        hub.light_matrix.write('4')
        wait_for_seconds(60)
        hub.light_matrix.write('3')
        wait_for_seconds(60)
        hub.light_matrix.write('2')
        wait_for_seconds(60)
        hub.light_matrix.write('1')
        wait_for_seconds(60)
        hub.light_matrix.off()
        hub.speaker.beep(60, 0.5)
        hub.speaker.beep(72, 0.5)
```

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Qu'est-ce que c'est ?

<https://education.lego.com/fr-fr/lessons/prime-extra-resources/what-is-this>



```
from spike import Motor

motor = Motor('F')

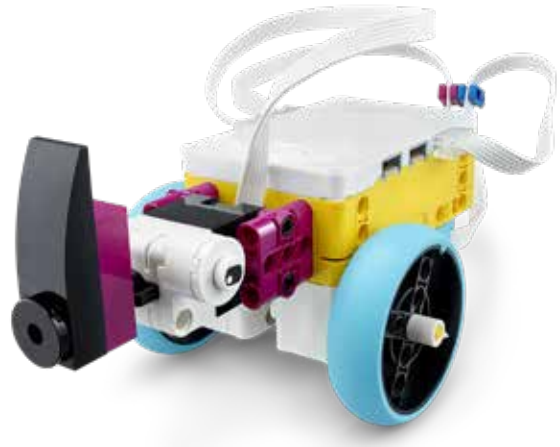
motor.set_stall_detection(False)

for x in range(5):
    motor.set_default_speed(50)
    motor.run_for_seconds(2)
    motor.set_default_speed(-50)
    motor.run_for_seconds(2)
```

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De justesse

<https://education.lego.com/fr-fr/lessons/prime-extra-resources/going-the-distance>



```
from spike import MotorPair

drive_motors = MotorPair('B', 'A')

drive_motors.set_default_speed(50)

drive_motors.move(10, 'rotations')
drive_motors.stop()
```

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Et c'est le buuuuuuut !

<https://education.lego.com/fr-fr/lessons/prime-extra-resources/goal>



```
from spike import PrimeHub, Motor
from spike.control import wait_for_seconds
```

```
hub = PrimeHub()
kicker = Motor('A')
kicker.set_default_speed(100)
```

```
while True:
    kicker.run_to_position(0)

    hub.left_button.wait_until_pressed()
    kicker.run_for_rotations(1)
    wait_for_seconds(1)
```