iRobot Education

Unit 2

Robot Senses

Unit 2 introduces Root's touch sensors and demonstrates how to use the Wait Block, When Bump Block, and When Touch Block. Explore how all of Root's touch sensors work and edit them for more precise use. Practice new coding skills by building a TrafficBot and a Touchbot.

The main coding concepts explored include sequencing and conditional statements. Additionally, learners will review how to use the Light Block, Move Block, Turn Block, and Event Block.

Objectives:

Use Wait Blocks to time actions
Code Root to respond when the four zones on top of Root are touched and when the two bump sensors on the front of Root are pressed

Code Blocks Introduced:

When Bump Block
When Touch Block
Wait Block

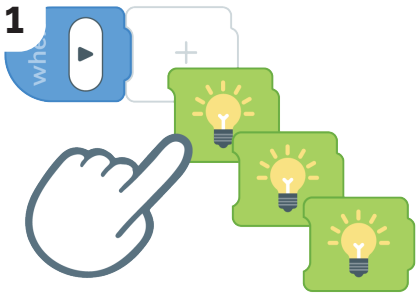
Coding Concepts:

Sequencing
Conditional Statement
Event
Sensor
Test

Light Show

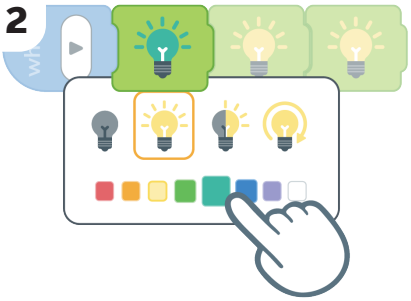
LESSON 2.1

1



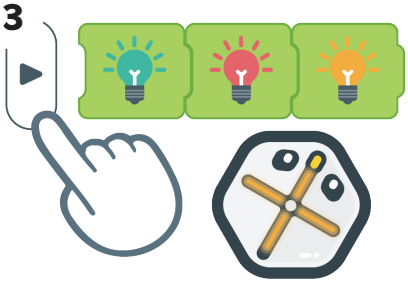
Let's start our light show with three Light Blocks.

2



For more fun, tap on each Light Block and edit to make each a different color.

3

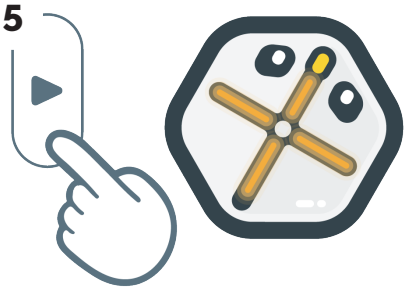


Press Play. Did you see all three colors?

4

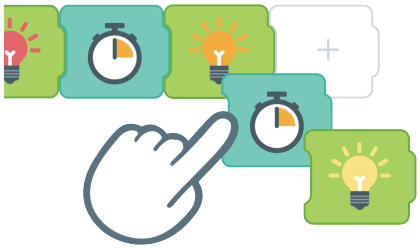
The lights flashed really fast! Try adding Wait Blocks to make your lights change slower.

5



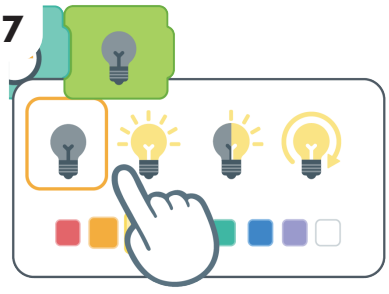
Press Play. When you are done, press Stop.

6



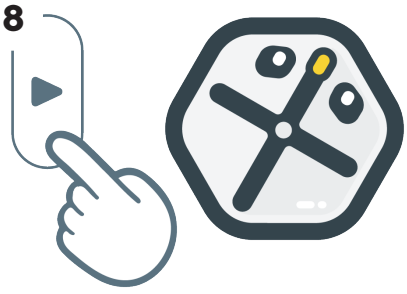
Add another Wait Block and then a Light Block.

7



To turn off the light, edit the Light Block to the "off" setting.

8



Press Play. What happens after Root runs through all the lights?

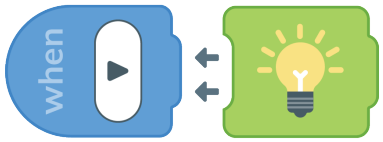
9

You earned the Wait Block. The Wait Block is used to tell Root how long to wait before going to the next code block.

Using Root's Bump Sensors

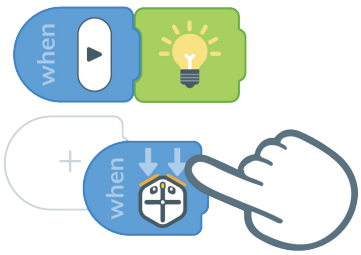
LESSON 2.2

1



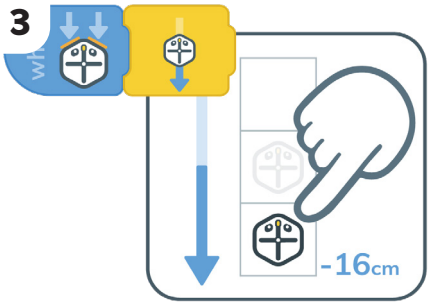
Code Root to light up when you tap Play.

2



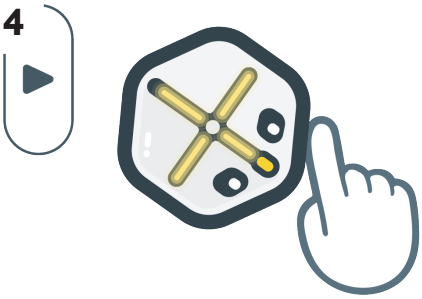
Drag out a When Bump Block. It tells Root how to respond when its bump sensors are bumped.

3



Attach a Move Block and edit it to make Root move backwards.

4



Press Play. Try pressing Root's front bumpers. How does Root respond?

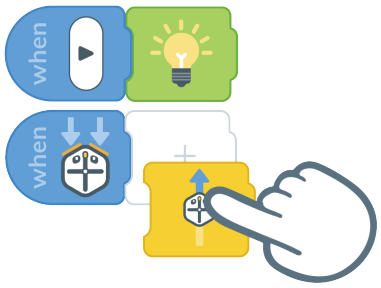
5

You've earned the When Bump Block. We can use the When Bump Block to help Root respond to things in its way!

Editing Root's Bump Sensors

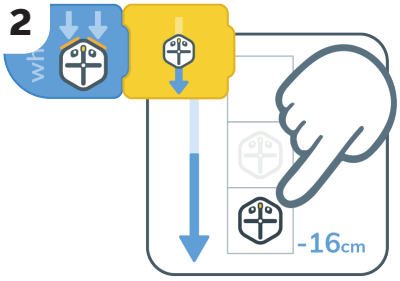
LESSON 2.3

1



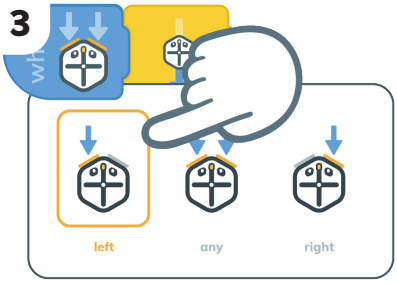
Code Root to light up when you press Play. Drag out a When Bump Block and attach a Move Block.

2



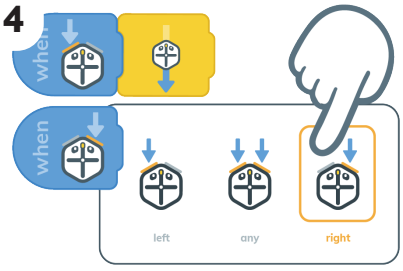
Edit the Move Block to make Root move backward.

3



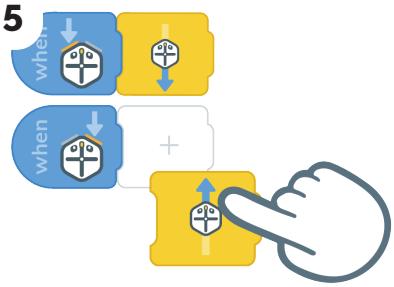
Tap on the When Bump Block. We can use the editor to pick one or both of Root's bumpers. Select Root's left bumper.

4



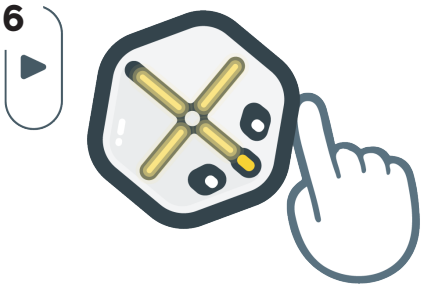
Add a second When Bump Block and edit it to select Root's right bumper.

5



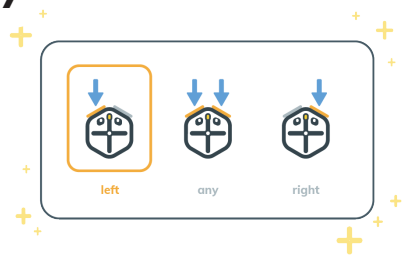
Attach a Move Block.

6



Press Play and tap on each of Root's bumpers. What does Root do?

7

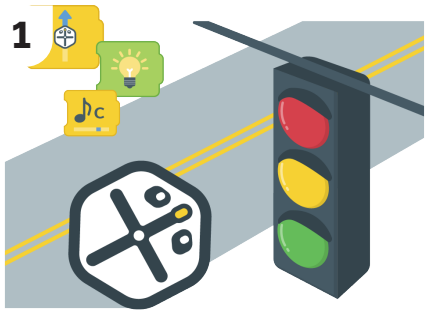


You've learned how to edit the When Bump Block.

TrafficBot

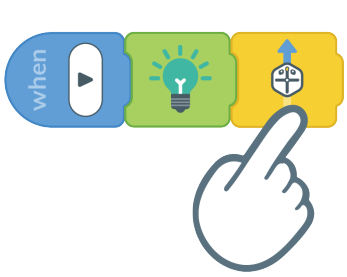
PROJECT 2.1

1



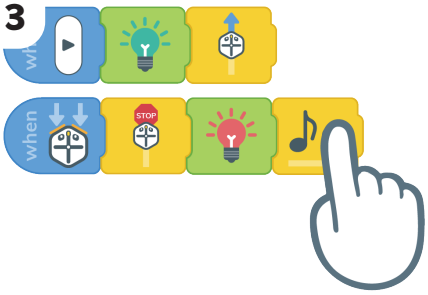
Use Move, Light, Music, and When Bump Blocks to make a Traffic Bot.

2



First, code Root to turn its light green and move forward when you press Play.

3



Next, code Root to stop, turn its red light on, and beep if it bumps into an object. Press Play to see what happens.

4

You made Root respond with movement, light, and sound using the When Bump Blocks.

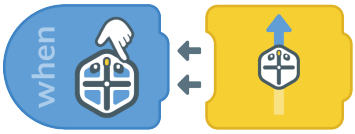
When Touch Block

LESSON 2.4

1

Let's code Root to move when we touch its top. Start by dragging out a When Touch Block.

2



Add a Move Block and press Play.

3

Touch the top of Root to see Root drive forward. Press Stop.

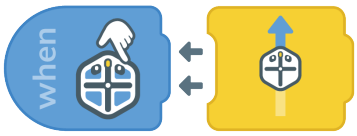
4

You earned the When Touch Block!

Editing When Touch Block

LESSON 2.5

1



Let's turn Root's top into two buttons. Drag out a When Touch Block and a Move Block.

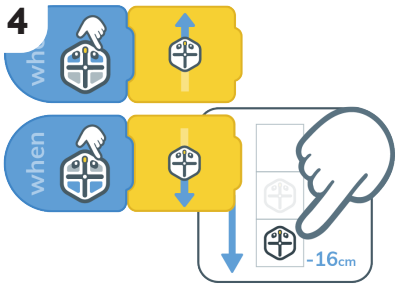
2

Edit the When Touch Block and edit so only the front of Root's top is on.

3

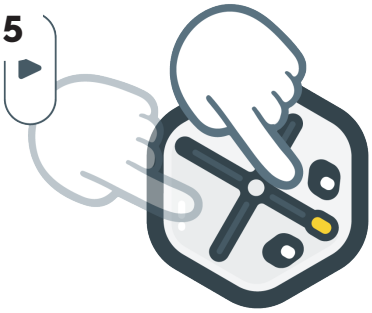
Add another When Touch Block and edit it so only the back of Root's top is on.

4



Attach a Move Block and edit it to make Root move backward.

5



Press Play. Touch different zones and watch Root move forward and backward.

6

You've learned how to edit the When Touch Block and turn Root's top into four different buttons!

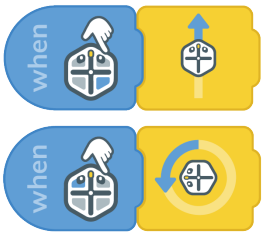
Build a Touchbot

PROJECT 2.2

1

Mark each of the white parts on top of Root with an up, down, left, or right arrow.

2



Code Root to move in the direction of the arrow when each part is touched.

3

Now code Root to light up different colors when each bumper is pressed.

4

You'll need multiple When Bump, Move, Turn, and Light Blocks to create a Touchbot.

5

You made Root respond with movement and light using the When Touch and When Bump Blocks.