

Unit 1

Meet Root

Welcome to the world of Root Coding! The purpose of Unit 1 is to introduce students to the basics of our Level 1 beginner Code Blocks. By the end of the unit, students will be able to code Root to move forward and backward different distances, turn left and right different degrees, glow 8 different colors and patterns, and play musical notes in four different durations and in 86 different tones.

Objectives:

- Code Root to move, turn, and play music.
- Use values to specify how much, how far, and how long in code.

Code Blocks Introduced:

When Play
Light
Move
Turn
Music

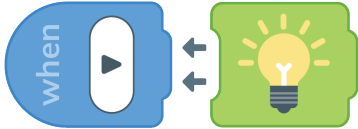
Coding Concepts:

Code
Event
Function
Parameter

Make Root Light Up

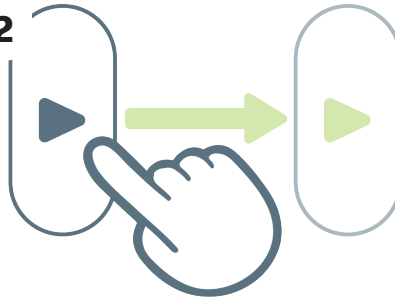
LESSON 1.1

1



Drag out a Light Block.

2



Press Play to run your project.
The button will turn green when
Root is reading your code.

3



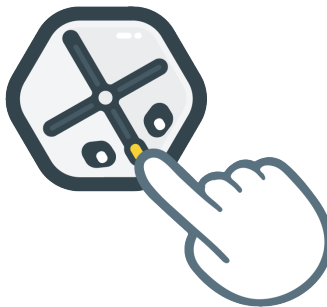
Does Root light up?

4



Press Stop to end your project.

5



You can also press Root's nose
to stop your project.

6

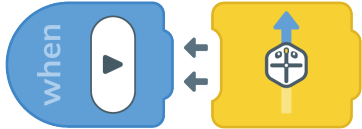


You earned your first coding
block, Light Block!

Get Root Moving

LESSON 1.2

1



Drag out a Move Block. This block tells Root to move one step forward, about the same size as Root.

2



Press Play to run your project.

3



To make Root take two steps, add another Move Block.

4



Press Play to run your project again. Keep adding blocks if you want to make Root go farther.

5



When dragging blocks, a trash can appears. Drag blocks over the trash can to delete.

6

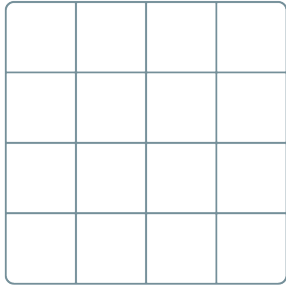


You earned a new block, Move Block!

Simple Sidewalk

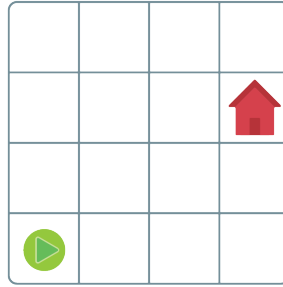
PROJECT 1.1

1



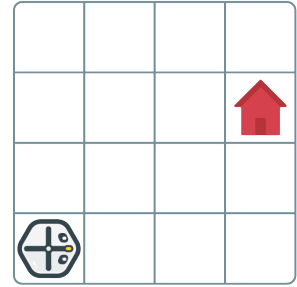
Lay out the grid that came with Root.

2



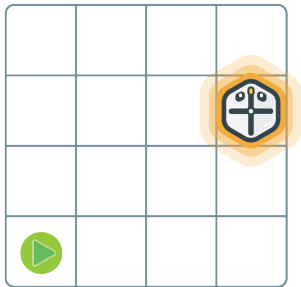
Place your Start and Home stickers on two different parts of your whiteboard.

3



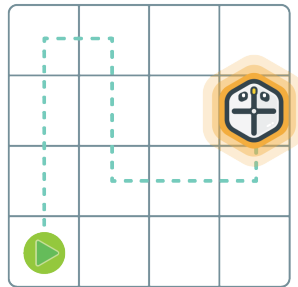
Place Root on top of the Start sticker.

4



Code Root to get to the Home square using Move and Turn Blocks.

5



Use a whiteboard marker to draw a path from Start to Home. Press Play to try your code.

6



You coded Root to respond to events. To keep going, try putting the Start and Home stickers in different places.

Make Root Turn

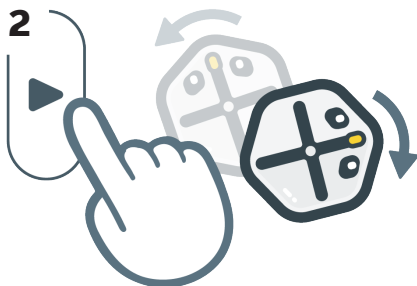
LESSON 1.3

1



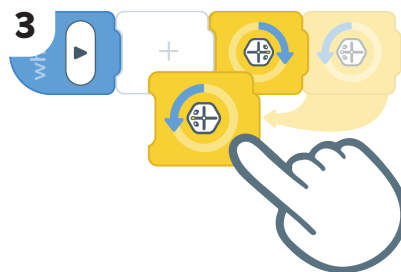
Drag out one of each type of Turn Block. These blocks make Root turn to the left or to the right.

2



Press Play. Watch Root turn to one side and back to where it started.

3



What happens when you swap the order of the two Turn Blocks and press Play?

4



Try adding more Move and Turn Blocks. What happens when you change the order?

5



You earned both Turn Blocks!

Control Root's Movements

LESSON 1.4

1



Drag out a Move and Turn Block.

2



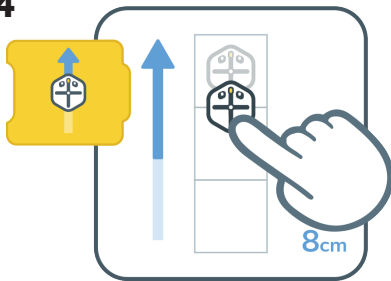
Tap on the Move Block. An editor will open.

3



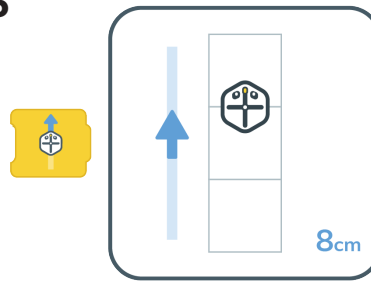
When you tap anywhere on the screen, the editor window will close.

4



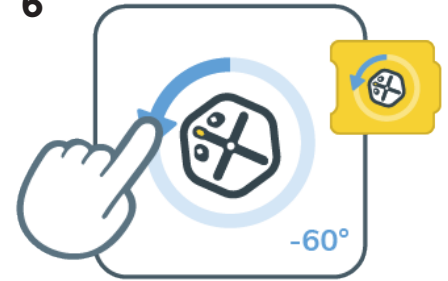
Tap on the Move Block to open its editor. Drag the Root icon up and down to make Root take a shorter or backward step.

5



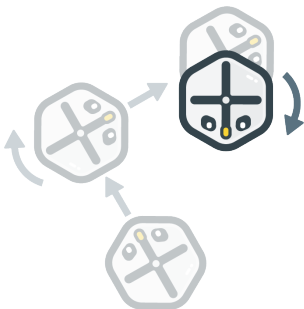
Notice how blocks change to match the settings in the editors. This makes it easy to read your code.

6



Now tap on the Turn Block. Drag your finger around the Root icon in a circle to change the angle Root turns.

7



Press Play to watch Root move and turn. Keep editing blocks to change Root's movement.

8



You learned how to edit the Move and Turn Blocks!

Make Root Light up and Change Colors

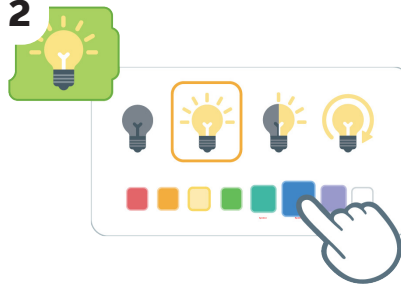
LESSON 1.5

1



Drag out a Light Block.

2



Tap on the Light Block. You can change the color of the light, turn it on or off, and make it spin or blink.

3



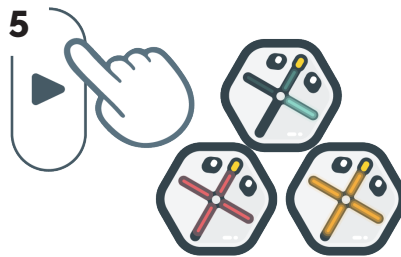
Press Play to watch Root light up.

4



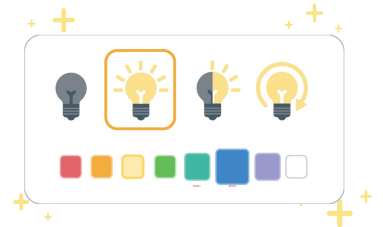
Edit the Light Block to try other colors and styles.

5



Press Play after each edit to watch Root light up.

6

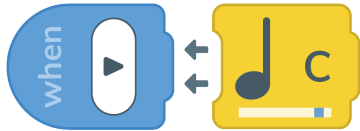


You learned how to edit the Light Block!

Play Some Music

LESSON 1.6

1



Drag out a Music Block.

2



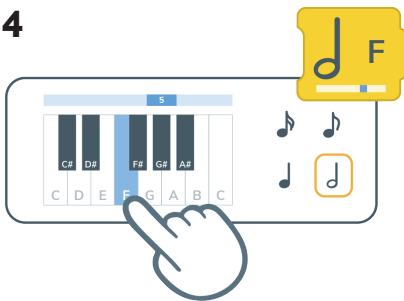
Press Play to hear Root play the note.

3



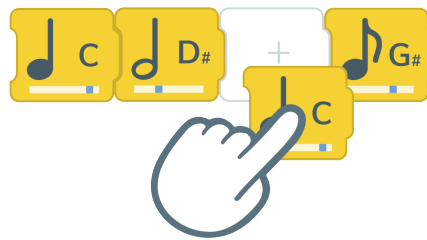
Drag out a second Music Block.

4



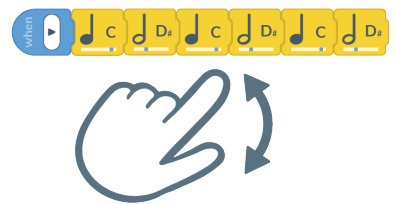
Tap on a Music Block. Use the editor to select the tone and length of the note. Drag the bar to change the note's octave.

5



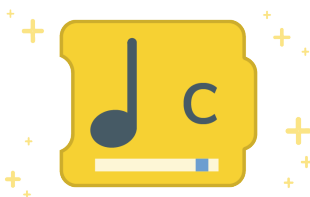
Try making your own song by adding more Music Blocks and editing them to choose different notes.

6



Pinch to zoom in and out on the coding screen so you can better see your code.

7



You earned a new block, Music Block!

Obstacle Course

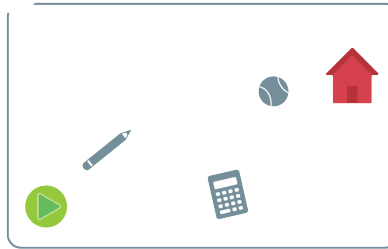
PROJECT 1.2

1



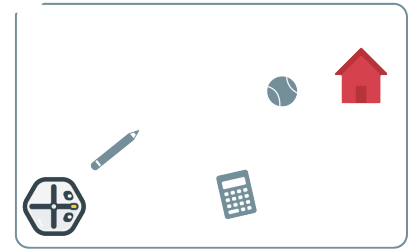
Place the provided Start and Home stickers on a floor or tabletop.

2



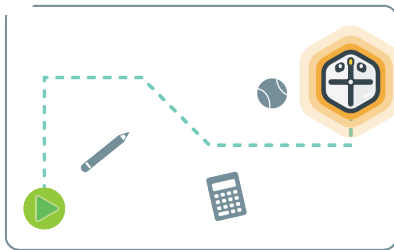
Place several objects between the two stickers.

3



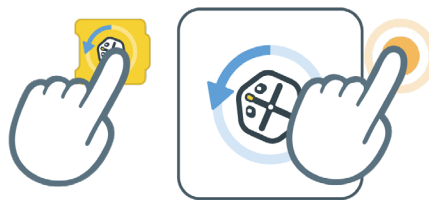
Place Root on the Start sticker.

4



Code Root to get from Start to Home by moving around obstacles.

5



Tap on each block to see the editor. Tap anywhere off the editor to close it.

6



You coded Root to move around obstacles by editing block settings. To keep going, add more objects for Root to get around.

Dance Floor

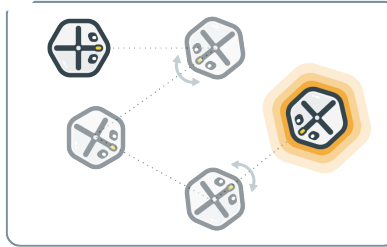
PROJECT 1.3

1



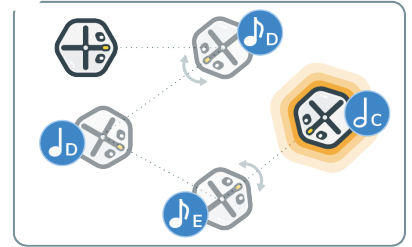
Place Root on a hard, flat surface like a floor or tabletop.

2



Use the Move and Turn Blocks, with edits, to code Root to do a dance. Press Play to test your code.

3



For an added challenge, use the Music Block to add music sequences between dance moves.

4



You coded Root to dance using the Move, Turn, and Music Blocks. To keep going, add more steps and notes.