

SPIDERBOT

Robotics lesson designed for Ozobot Bit or Ozobot Evo

LESSON OBJECTIVE

Dress up your Ozobot Bit or Evo robot as a spider and program it to move along its spider web. Make sure the spider doesn't leave it!

Student age:	8-11 years old
Lesson duration:	45 minutes
Create:	10 minutes
Check:	5 minutes
Code:	20 minutes
Celebrate:	10 minutes

RESOURCES NEEDED

Ozobot Bit or Evo robot, PC or tablet, spider's web and costume printed out on an A4 paper sheet (attachments), paper scissors, sticky tape (or adhesive for paper).

LESSON PLAN

For this lesson, Ozobot will become a spider crawling on its web. To help your robot get into the character, you'll attach 8 printed and cut out spidery legs. In order to detect and follow the black line of its web, Ozobot will rely on contrast sensors. By using OzoBlockly app, you will also program the LED light of your robot.

1. Print out the lesson attachment with spider web and costume for Ozobot.
2. Cut out and fold the spidery costume, then attach it to your Ozobot with tape.
3. Create the program in the OzoBlockly app. On the next page, you'll find a suggested program with instructions and explanations.
4. Upload your program to Ozobot, place the robot on the printed-out web and activate.

CREATE

1. Cut off the part with the costume for Ozobot from the part with spider's web.
2. Carefully cut out the costume for Ozobot - it should remain in one piece. Vertical stripes will become your spider's legs; the horizontal stripe will be used to attach the costume to the robot.
3. Take a small part of sticky tape; it should be as wide as the horizontal stripe in the costume.
4. Wrap the horizontal stripe around the bottom part of the robot. The white side should be visible, the legs should be pointing upwards. Ends of the horizontal stripe should meet in the back of the robot.
5. Wrap the stripe tightly around the robot and tape one end to the other.
6. Fold the spider's legs in several places. They should be hanging freely above the ground and look like legs of a real spider.

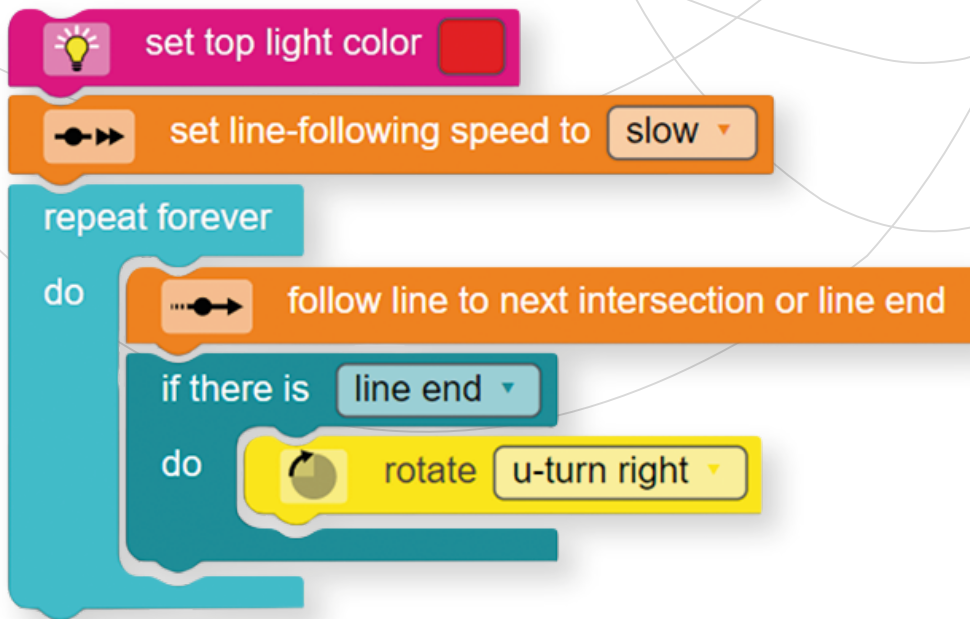
CHECK

1. Make sure the costume doesn't apart when Ozobot is moving. If it's not attached tightly enough, carefully remove the tape and wrap your robot tighter.

CODE

Main task of this robot is to follow the black line that the spider web is made of. Turning direction at crossroads is random. Once the spider reaches the end of the line, it should turn around and continue driving. In order to add a dash of character to our spider, you will also program its LED light to shine red.

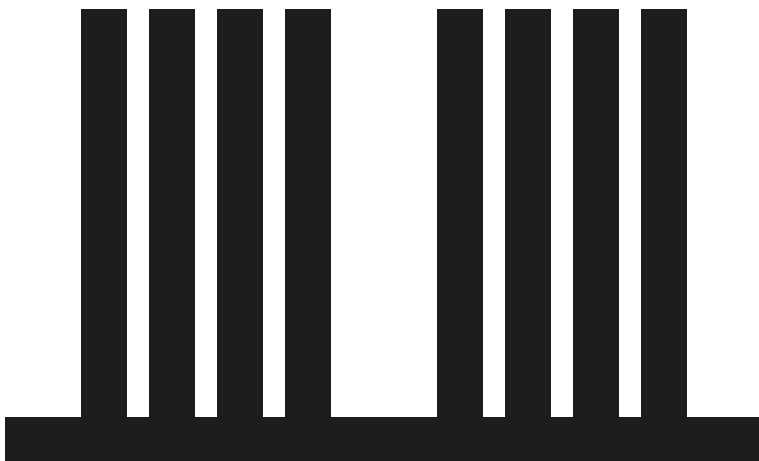
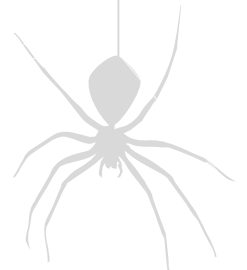
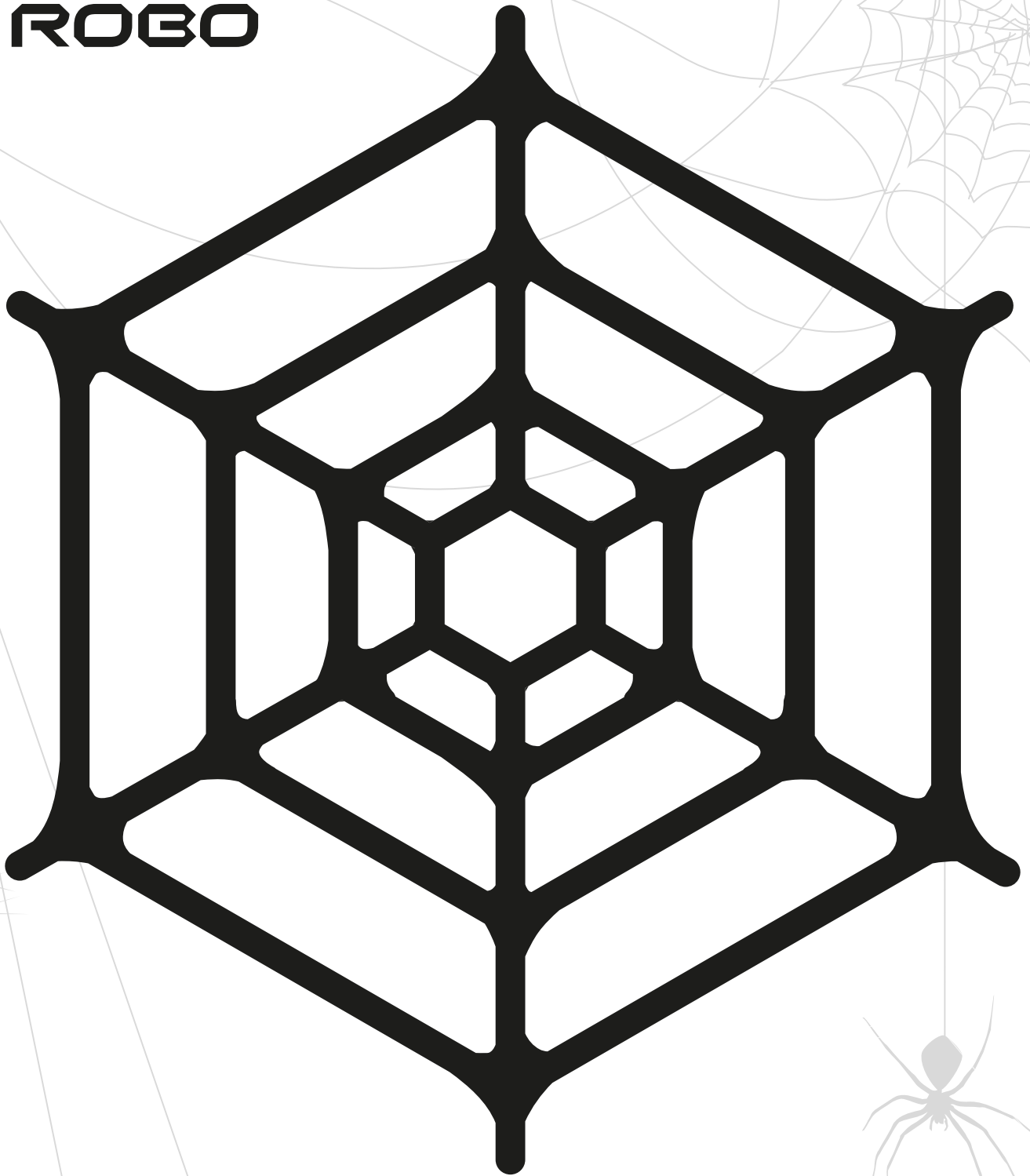
1. Open the Ozoblockly app <https://ozoblockly.com/> on your device.
2. Use the panel on the right to find Settings or select the language you want to use.
3. Adjust the interface: depending on the robot you'll be using, select Bit or Evo and set it to the 3rd difficulty level. These options are available in the panel on the left.



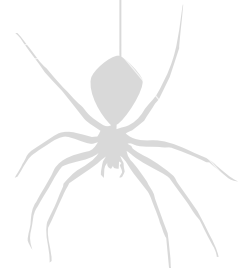
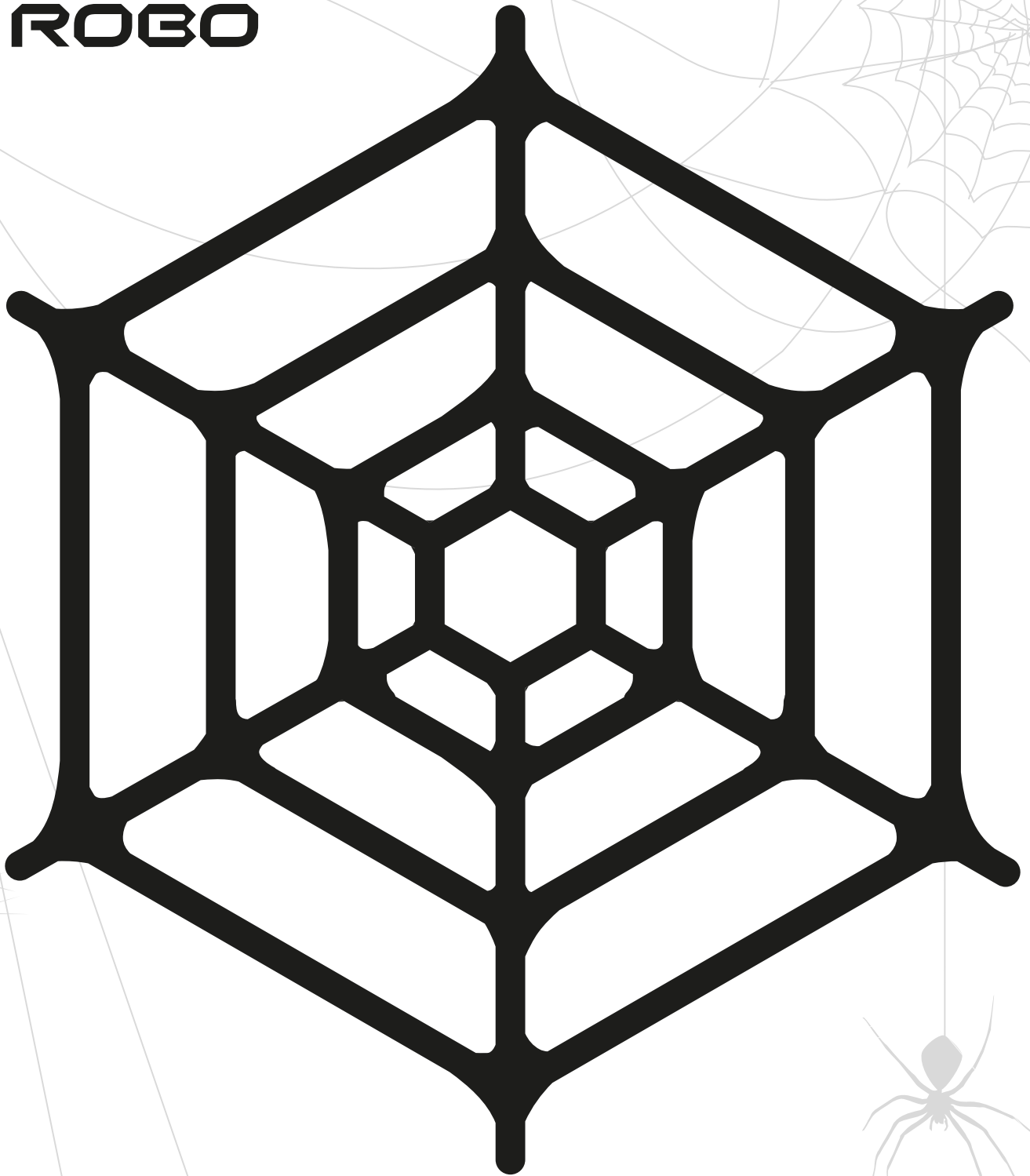
4. From "**Light Effects**" drag "**set top light color**" block and drop it to the programming area. Click the colorful square and select the red color.
5. From "**Line Navigation**" select "**set line-following speed to**" and place it under the previous block. Choose the "**slow**" parameter.
6. From "**Loops**" drag "**repeat forever ... do**" loop and drop it at the end of the program.
7. From "**Line Navigation**" select "**follow line to next intersection or line end**" and place it inside the loop.
8. From "**Logic**" take "**if there is ... do**" and add it to the program fragment inside the loop, right under the previous block. Set its parameter to "**line end**".
9. From "**Movement**" drag "**rotate**" and drop it inside the logic condition "**if there is ... do**". Next, select "**u-turn right**" from its drop-down list.
10. To activate the program, go to the "**FLASHING**" tab; it's located in the bottom left corner and has an icon resembling a flash of lightning. Follow the instructions displayed there and upload the program to your Ozobot.

CELEBRATE

1. Place your robotic spider on its black spider web and observe its behavior. Try experimenting with the program parameters: change the LED light color and its movement speed.
2. How else can you change your spider's behavior without making it leave the web?



Ozobot
Bit



Ozobot
Evo