

Lesson 3: Sensor Wait-for's Programming Solutions

Exercise 1: Solution

Turn on motor A in the forward direction. When the touch sensor is pressed and held, reverse the motor direction. When the touch sensor is released, stop the motor.

Turn on forward Wait for press Reverse Wait for release Stop

Notice you can string several icons to the same sensor port

Exercise 2: Solution

Start by holding the light sensor over the white piece of paper. When the light sensor is moved over the black piece of paper, turn on motor A in the forward direction. Turn off the motor when the light sensor is moved back over the white piece of paper.

Wait until sensor sees the black paper Wait until sensor sees the white paper

Use a threshold that is halfway between white and black. Your light level may vary.

Exercise 3: Solution

Write a program that beeps once every time the rotational sensor is turned 1/4 rotation. Do this 10 times.

The program resets the number of ticks to 0 every time through the loop.

Use a loop to do this 10 times. Remember: There are 16 ticks per 1 revolution so 4 ticks = 1/4 rev.

Exercise 4: Solution

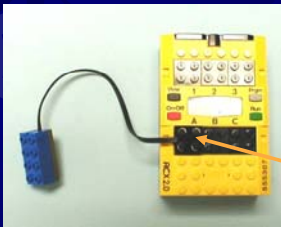
When the touch sensor is pressed, turn on motor A in the forward direction. Then, turn the rotational sensor 1 1/2 rotations to turn the motor off.

IMPORTANT: Different sensors must be on different ports. 24 ticks = 1 1/2 rotations

Lesson 3: Sensor Wait-for's Troubleshooting Tips

Problem 3a

Why won't the light sensor work?



This is a motor port.

Solution 3a

Sensors need to be connected to Sensor ports 1, 2 or 3.



Sensor ports

Problem 3b

What's wrong with this set up?

The touch sensor is connected to port 1.



But the software says the touch sensor is on port 3.

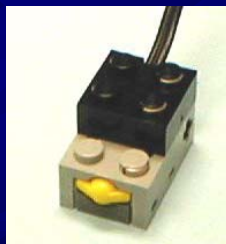
Solution 3b

- Connect the touch sensor to port 3.
- Or, change the port number in the software.



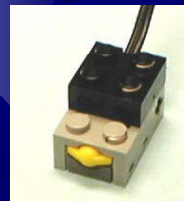
Problem 3c

Why won't the touch sensor work?



Solution 3c

Make sure the cable is connected to the front of the touch sensor.



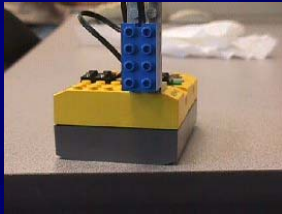
WRONG



RIGHT

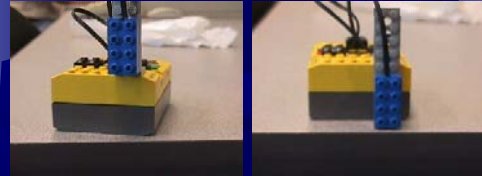
Problem 3d

What isn't too great about the way the light sensor is mounted?



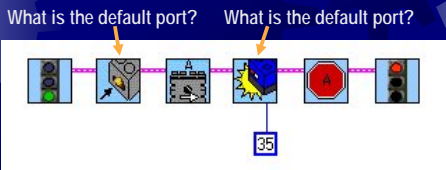
Solution 3d

If the light sensor is too high, it has a harder time distinguishing between black and white. Mounting it lower to the ground will help.



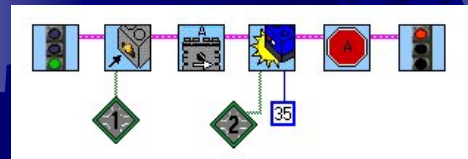
Problem 3e

What's wrong with this program?



Solution 3e

Remember: Different sensors MUST be on different ports in the software. If a port is not specified, it assumes Port 1.



Problem 3f

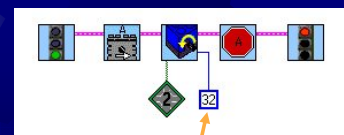
This program should turn on motor A until the rotational sensor has turned 2 revolutions, then turn off the motor. Why doesn't it work?



Hint: What is the default number of ticks in a Wait-for Rotation icon?

Solution 3f

The default number of ticks is 16, or 1 revolution. For 2 revolutions, you must specify the number of ticks with a numeric constant modifier.



32 ticks = 2 revolutions