

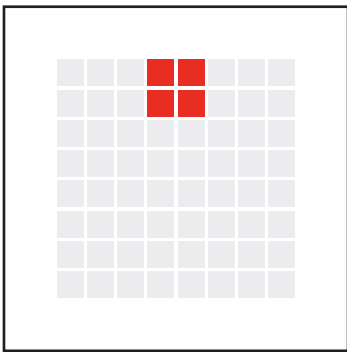
# WORKSHEET W025

## TRAFFIC LIGHT

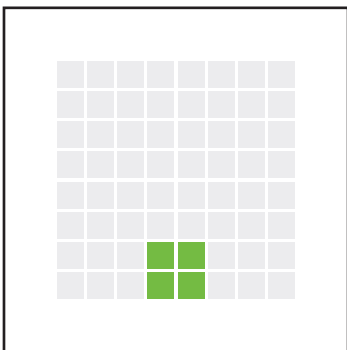
Have you ever wondered how a traffic light works? Now you learn how to program it.

### EXERCISE

Turn the Oxocard into a traffic light. It should show red first. When a button is pressed, the color should change from red-yellow to green. As soon as a button is pressed again, the traffic light should change from yellow back to red.



This is the default state. As long as nothing is pressed, the Oxocard should light up red.

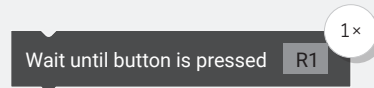
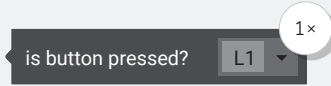
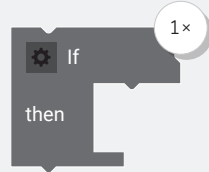


As soon as a button is pressed, the traffic light changes from red-yellow to green.

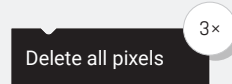
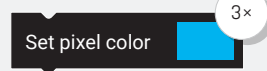
### HINT

Use functions for the three different colors.

#### LOGIC



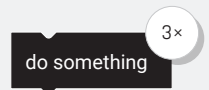
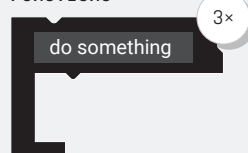
#### MATRIX



#### TIME



#### FUNCTIONS



#### PARTS LIST

LIST OF BLOCKS TO BE USED



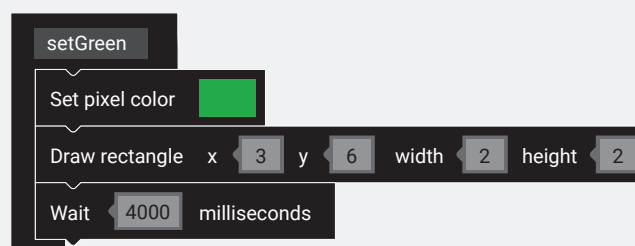
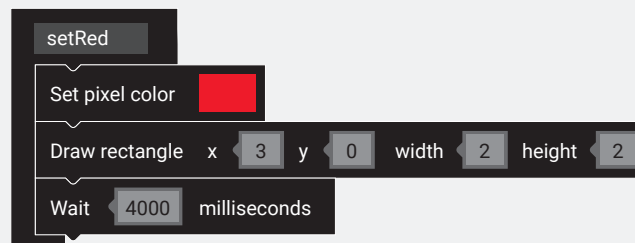
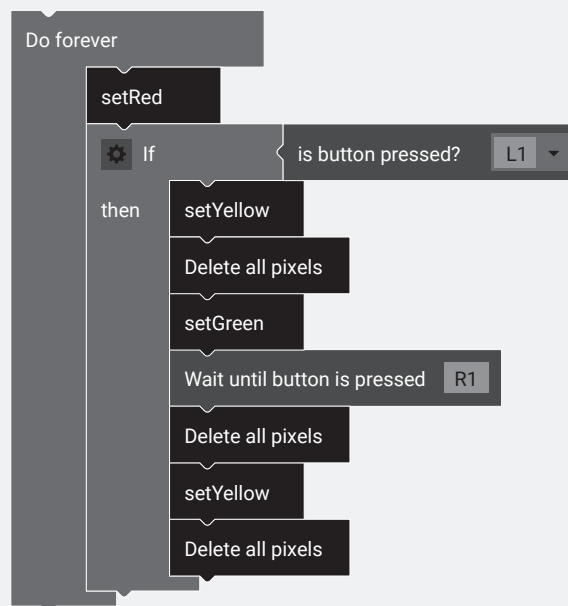
LEVEL INTERMEDIATE

# WORKSHEET W025

## TRAFFIC LIGHT

### SOLUTION

PROPOSED SOLUTION



# WORKSHEET W025

## TRAFFIC LIGHT

### Learning objective:

The students learn to program with functions and understand what states and finite automats are.

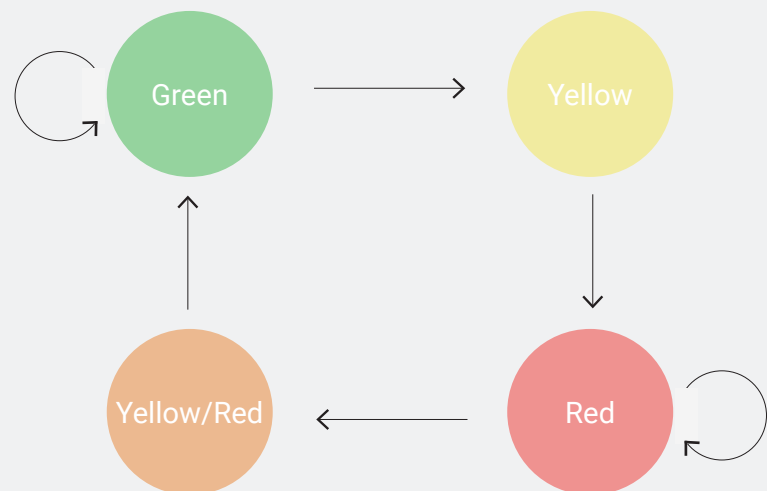
## WHAT TO DO

1.  
First you build three different functions to the colors green, red and yellow analogical. You set the pixel color, draw a rectangle, point or circle at a desired position (see our example on page 1) and then wait for a certain time. For example, red and green phases can last longer than yellow phases.
2.  
Next up is the «Do forever» block.
3.  
Then you first insert the basic state. This is the function call of the color red (e.g. setRed).
4.  
Next you will be asked if a button is pressed with which you want to switch the traffic light to green.
5.  
Now the function setYellow is called, so that we get into the red/yellow state. Then we delete all pixels and call the function setGreen.
6.  
In the last step we wait for a button to be pressed to set the traffic light back to red via yellow.

## NO NEW COMMANDS

## ADDITIONAL INFORMATION: FINITE STATE MACHINE

With a finite automaton you can model the states of a program.



The states in our traffic light example are: Green, Red, Yellow and Yellow/Red. The latter two are only transition states. The first two, Red and Green, are states in which the automat can remain permanent.