

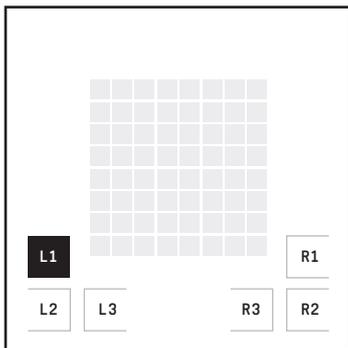
WORKSHEET W022

LOCAL COMMUNICATION I

One of the greatest features of the Oxocard is the ability to communicate with other Oxocards. In this worksheet you will learn how to exchange data in the same WLAN (bidirectional local communication).

EXERCISE

Expand and improve the program from the first communication worksheet (A018a and b) so that something can be sent and received simultaneously. Instead of the simple communication blocks, you should use the expert blocks.

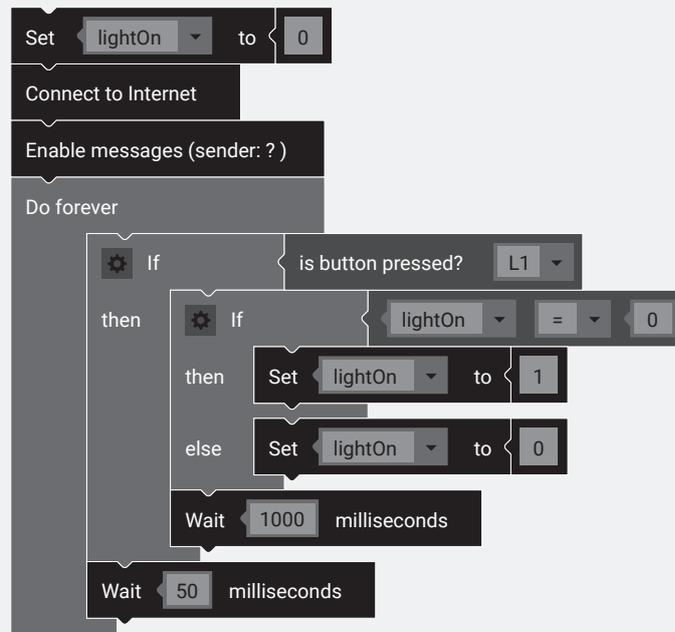


Similar to worksheets 18a and b, the LED matrix of the partner card should light up when you press L1.

The name of your Oxocard is used as sender. You can change this name in Blockly on the right, in the section «My Oxocard».

As the recipient, you must specify the name of the card to which you want to send the message.

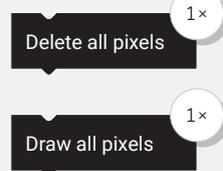
TEMPLATE



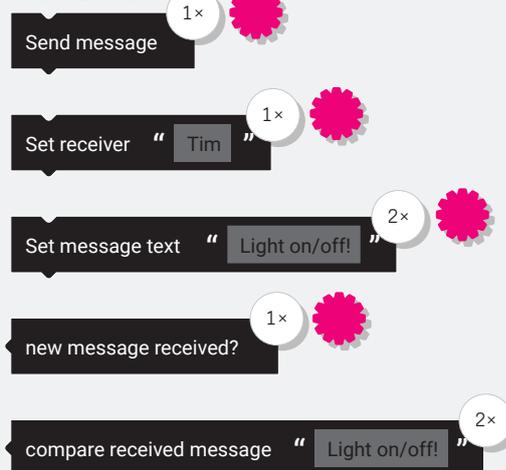
LOGIC



MATRIX



COMMUNICATION



PARTS LIST LIST OF BLOCKS TO BE USED



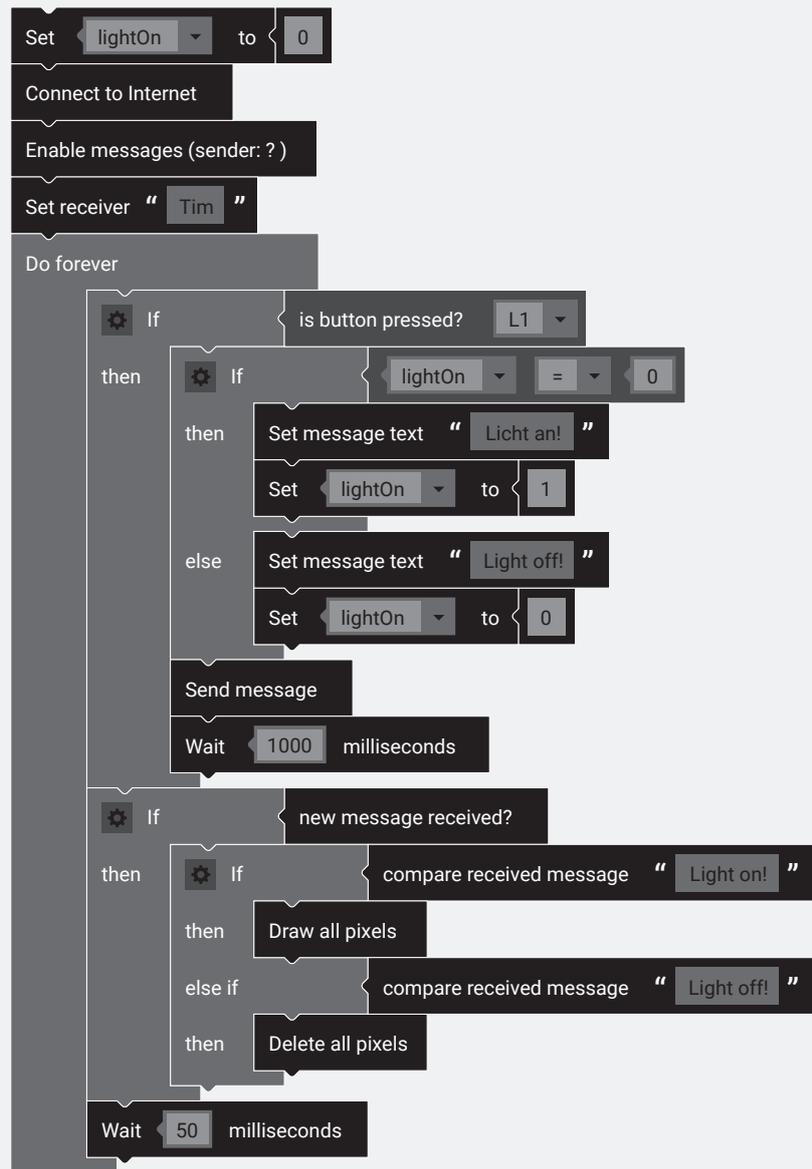
LEVEL EXPERT

WORKSHEET W022

LOCAL COMMUNICATION I

SOLUTION

PROPOSED SOLUTION



WORKSHEET W022

LOCAL COMMUNICATION I

Learning objective:

Capacity to work with the communication blocks from expert mode.

WHAT TO DO

- As with any communication program, the card must first connect to the Internet and enable the sending and receiving of messages.
- Then the «Set receiver» block must be used to define one (or more) receivers.
- The «Do forever» loop contains the button query and the query as to whether a new message has arrived.
- As with worksheet 18a, «Light on» or «Light off» should be transmitted alternately when a button (e.g. L1) is pressed.
In contrast to simple communication, setting the text and sending it is divided into two separate blocks.
- As with worksheet 18b, the received text should be processed when L1 is pressed.
- At the end there is a short «Wait» block, which gives the card some time to receive messages.



This is an «Expert-Block» and is only displayed if «Settings» – «Activate the Expert-Mode» is set.

Click on «Settings» in the lower left corner ...



Settings

... and select «Activate the Expert-Mode».

NEW COMMANDS

Send message

With this block you can send a previously defined short message locally (in the same WLAN) or globally (via Internet).
A short message always has one sender and one or more recipients. Optionally a text and/or different variables can be set, which are to be sent. After sending a short message, previously set contents are NOT lost.

Set receiver " Tim

Sets one or more recipients of a short message. The recipients can be lined up with commas or spaces.
For example: «Tim, Struppi, Haddock».
If all participants are to be sent locally, an asterisk (*) can also be specified.

new message received?

This block returns a true as soon as a new message is received (since messages were switched on). In contrast to the block: «Wait for messages» this block does not block the program and can therefore be queried within a short time more often in a loop. To give the Oxocard some time to receive messages, a short pause (≥ 50 milliseconds) should be used.

Set message text " Text

Sets any text of a short message.

compare received message " Text

Compares the text of the received message with the specified text. The block returns a true if the two texts are identical.

ADDITIONAL INFORMATION: USER DATAGRAM PROTOCOL

The Oxocard uses UDP for local communication. This protocol was developed around 1980 primarily for the wireless transmission of voice over the Internet.
In contrast to the Transmission Control Protocol (TCP), UDP is only responsible for addressing and not for ensuring data transmission. This makes the protocol relatively simple and permits a fast but not 100% reliable transmission of data.
Since no direct connection to a receiver has to be established before transmission, UDP also allows data to be sent to unknowns or all participants in the network. UDP uses ports to send data to the correct program of the remote device (e.g. an Oxocard or a computer).