

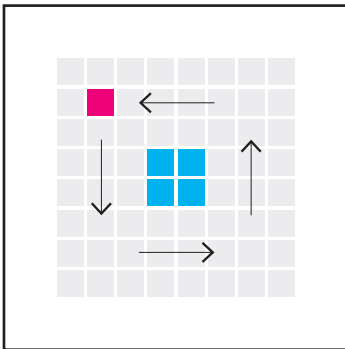
WORKSHEET W014

CURSOR

In this worksheet you will apply what you have learned so far and get to know the cursor of the accelerometer.

EXERCISE

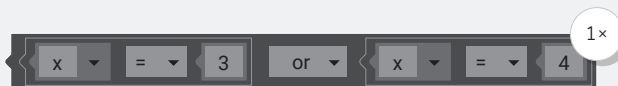
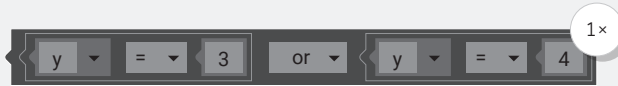
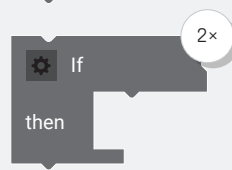
Program a game in which you have to rotate a pixel around the middle by tilting the oxocard. If the pixel touches the center, the game is over.



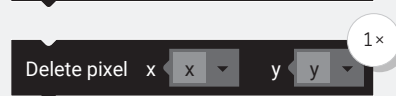
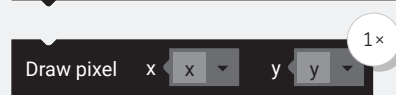
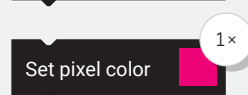
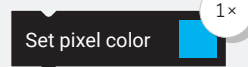
HINT

Set the starting position of the cursor and draw the rectangle in the middle before the «Do forever» block.

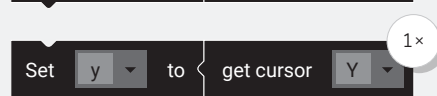
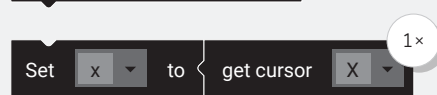
LOGIC



MATRIX



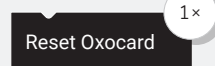
ACCELEROMETER



TIME



OXOCARD



PARTS LIST

LIST OF BLOCKS TO BE USED



LEVEL EXPERT

ADDITIONAL TASK:



Add a score that you display during a game over. Increase a variable for each round by checking if the pixel passed both above and below the center.

SOLUTION

PROPOSED SOLUTION

The code consists of the following blocks:

- Set cursor** x: 1, y: 1
- Set pixel color** (blue)
- Draw rectangle** x: 3, y: 3, width: 2, height: 2
- Do forever** loop:
 - Set** x to **get cursor** X
 - Set** y to **get cursor** Y
 - Set pixel color** (pink)
 - Draw pixel** x: x, y: y
 - Wait** 100 milliseconds
 - Delete pixel** x: x, y: y
 - If** (y = 3 or y = 4) **then** **If** (x = 3 or x = 4) **then** **Reset Oxocard**

ADDITIONAL TASK

PROPOSED SOLUTION

The code consists of the following blocks:

- Set **above** to 0
- Set **below** to 0
- Set **points** to 0
- Set cursor x to 1 y to 1
- Set pixel color to blue
- Draw rectangle x to 3 y to 3 width 2 height 2
- Do forever loop:
 - Set x to get cursor X
 - Set y to get cursor Y
 - Set pixel color to pink
 - Draw pixel x to x y to y
 - Wait 100 milliseconds
 - Delete pixel x to x y to y
 - If $y = 3$ or $y = 4$ then:
 - If $x = 3$ or $x = 4$ then:
 - Draw number **points**
 - Wait 3000 milliseconds
 - Reset Oxocard
 - If $x = 3$ and $y > 4$ then:
 - Set **below** to 1
 - Else if $x = 4$ and $y < 3$ then:
 - Set **above** to 1
 - If **above** and **below** then:
 - Add 1 to **points**
 - Set **above** to 0
 - Set **below** to 0

WORKSHEET W014

CURSOR

Learning objective:

Capacity to deepen the programming knowledge and to know the cursor of the accelerometer.

WHAT TO DO

1.
First the starting position of the cursor is set and the blue rectangle is drawn in the middle.
2.
Then comes the «Do forever» loop. All other blocks must be positioned in this loop.
3.
Next we get the current position of the cursor and draw the red pixel for 100 milliseconds.
4.
Finally, we check whether the current position of the pixel within the rectangle is in the center. If this is the case, we reset the oxocard.



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 ...



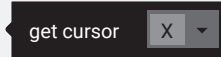
Settings

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

NEW COMMANDS



The «Set cursor» block is usually only used to define the start position of the cursor.



In the dropdown menu of the «get cursor» block you can select the desired axis (X or Y). Since the LED matrix is two-dimensional, there is no Z-axis here. The «get cursor» block returns a value between 0 and 7 and can therefore be used directly to draw on the LED matrix.

ADDITIONAL INFORMATION: CURSOR

The cursor function is intended to simplify the programming of e.g. games that are controlled by the accelerometer. However, the functionality could also be implemented relatively easily with a few blocks.

The «get cursor» block simply does the following steps in the background:

1. Get the «x»- or «y»-acceleration.
2. Check whether the acceleration is above or below a certain threshold value (e.g. 20).
3. If this is the case, increase or decrease the cursor variable.
4. Make sure that the variable does not fall below or exceed the range from 0 to 7.
5. Return the cursor variable.