WORKSHEET W010

PIANO

The Oxocard also has a tone generator and an audio interface. With the help of headphones or a speaker you can output the programmed sounds. All available audio functions can be found in Blockly in the speaker category.

EXERCISE

Convert the Oxocard into a piano and let the display light up each time a sound is generated.

HINT

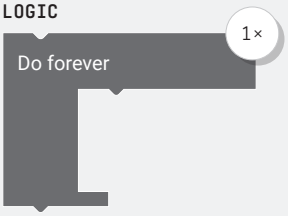
When a button is pressed, a certain tone is to be played and the display lights up. This should be done as long as the button is pressed.

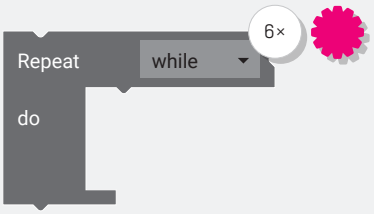
PARTS LIST

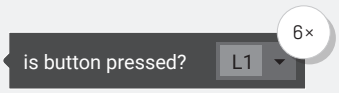
LIST OF BLOCKS TO BE USED

LEVEL INTERMEDIATE

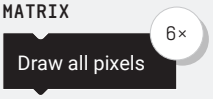
LOGIC

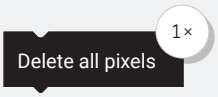




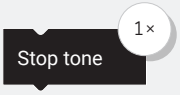


MATRIX





SPEAKER



ADDITIONAL TASK:

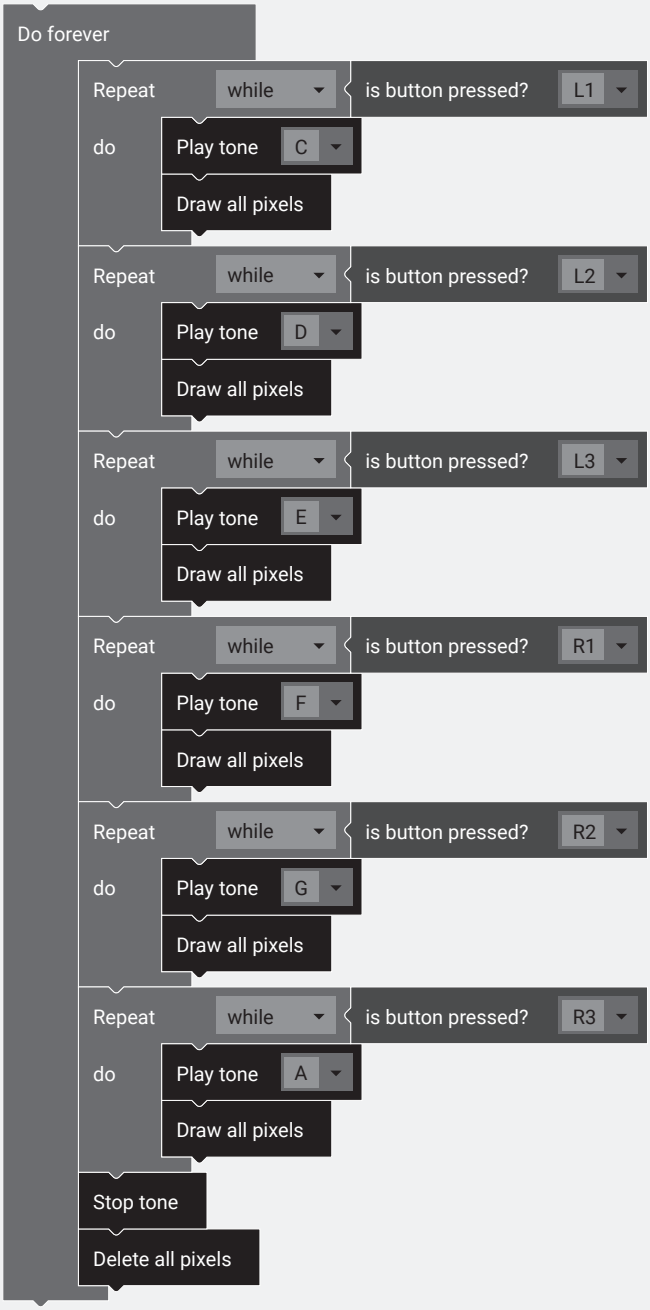
Experiment with different octaves, timbres and volumes.

WORKSHEET W010

PIANO

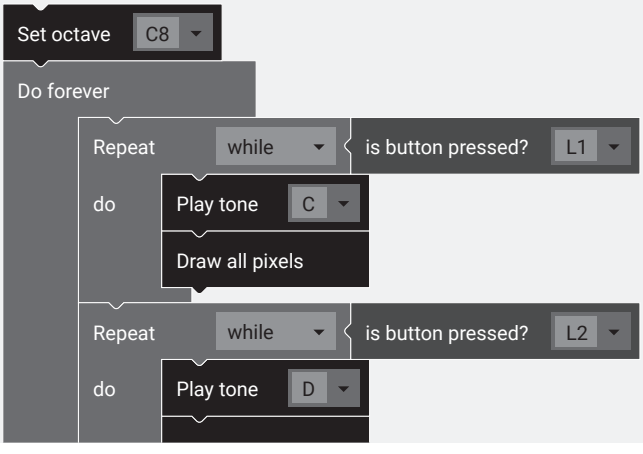
SOLUTION

PROPOSED SOLUTION



ADDITIONAL TASK

PROPOSED SOLUTION



TEACHER COMMENT

WORKSHEET W010

PIANO

Learning objective:
Capacity to program tone and sounds with the speaker category.

WHAT TO DO

1.
First the «Do forever» loop is needed again. All blocks must be positioned in this loop.

2.
Next comes the «Repeat while» loop.

3.
«is button pressed?» is used as a condition.

4.
In the «do» column comes the «Play tone» and the «Draw all pixels» blocks.

5.
The previous three steps are repeated 5 times until all buttons can produce a sound.

6.
Finally there is the «Stop tone» and «Delete all pixels» block.

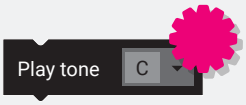
This is an «Expert-Block» and is only displayed if «Settings» – «Activate the Expert-Mode» is set.

Click on «Settings» in the lower left corner …

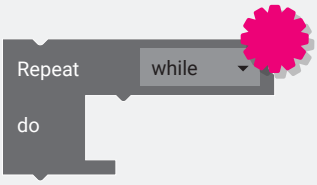
Settings

… and select «Activate the Expert-Mode».

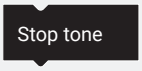
NEW COMMANDS



This block plays a selected tone until the «Stop tone» block is recalled or the Oxocard is switched off.



This block repeats everything as long as or until a certain condition is fulfilled.

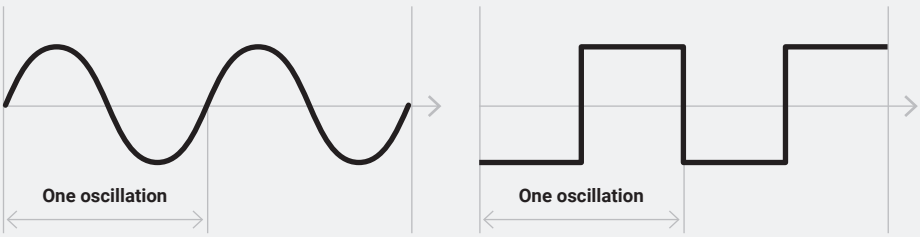


The «Stop tone» block stops all the sounds.

ADDITIONAL INFORMATION: SOUNDS

The frequency is a measure of how often the air oscillates per second. The unit for the frequency is Hertz, named after the German physicist Heinrich Hertz (1857-1894) - so it has nothing to do with the heartbeat.

With the sine wave (oscillation), the level slowly increases and slowly decreases again. It produces a soft tone:



The square-wave signal, on the other hand, sounds a little more croaking and less soft. It corresponds to the typical sound of old video games.

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