

Soft Robots

Efterår 2018

2 af 4

Plan

- Dag 1 – hack dine tøj!
 - nøgleord: soft robots, wearables, adafruit
 - ”smart handske” / smart glove projektet
- Dag 2
 - færdiggøre ”smart handske”
 - fælles præsentation & test af handskerne
- Dag 3
 - et andet projekt
- Dag 4
 - færdiggøre projektet
 - præsentation & test

Programmer

<https://makecode.adafruit.com/>

- 01_circuitplayground-do2things.uf2 -> variabler, onStart, if
- 02_circuitplayground-selector.uf2 -> forever
- 03_circuitplayground-infraredMessage -> infrarød signaler
- 04_circuitplayground-createRandomSounds.uf2 -> repeat, pick-random
- 05_circuitplayground-createRandomColors_RGB -> RGB, random
- 06_circuitplayground-fireStorm.uf2 -> speciel effekt!

01 do2things

Search...

Variables

Make a Variable...

i

set i to 0

change i by 1

clear

set pixel color at i to green

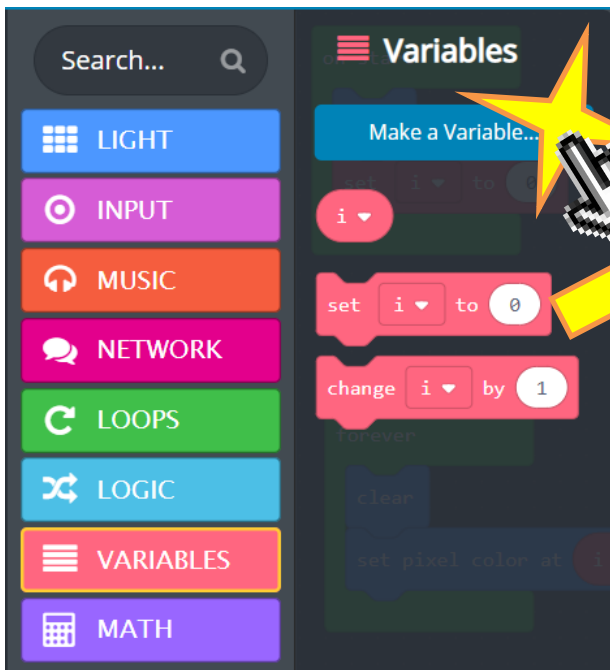
Categories: LIGHT, INPUT, MUSIC, NETWORK, LOOPS, LOGIC, VARIABLES, MATH

```
on start
  clear
  set i to 0
  clear
  set pixel color at i to green

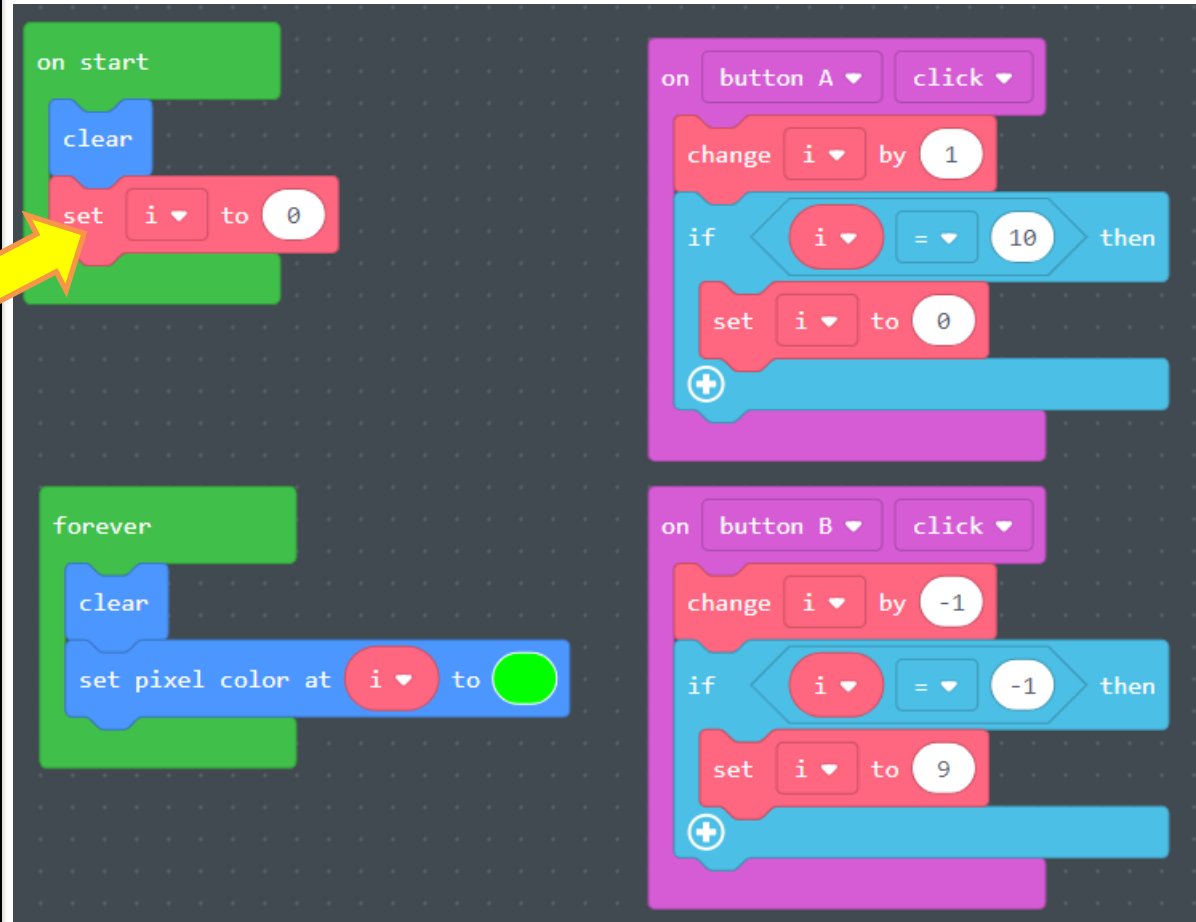
on button A click
  if i = 1 then
    set i to 0
  else
    set i to 1
  clear
  set pixel color at i to green

on button B click
  if i = 0 then
    show animation for 750 ms
  if i = 1 then
    play tone at Middle C for 1 beat
  clear
  set pixel color at i to green
```

02 selector



The image shows the Scratch 'Variables' palette. On the left, there is a search bar and a list of categories: LIGHT, INPUT, MUSIC, NETWORK, LOOPS, LOGIC, VARIABLES, and MATH. The 'VARIABLES' category is highlighted in red. On the right, the 'Variables' section is open, showing a 'Make a Variable...' button and a variable named 'i'. Below the variable name are three blocks: 'set i to 0', 'change i by 1', and a 'forever' loop containing 'clear' and 'set pixel color at i'. A yellow starburst and a hand cursor icon are positioned over the 'set i to 0' block, with a yellow arrow pointing from it towards the main workspace.



The image shows a Scratch workspace with two scripts. The first script, under the 'on start' event, contains a 'clear' block followed by a 'set i to 0' block. The second script, under a 'forever' loop, contains a 'clear' block followed by a 'set pixel color at i to green' block. To the right, there are two event-driven scripts. The first is triggered by 'button A click' and contains a 'change i by 1' block, an 'if i = 10 then' block with a 'set i to 0' block inside, and a '+' sign. The second is triggered by 'button B click' and contains a 'change i by -1' block, an 'if i = -1 then' block with a 'set i to 9' block inside, and a '+' sign.

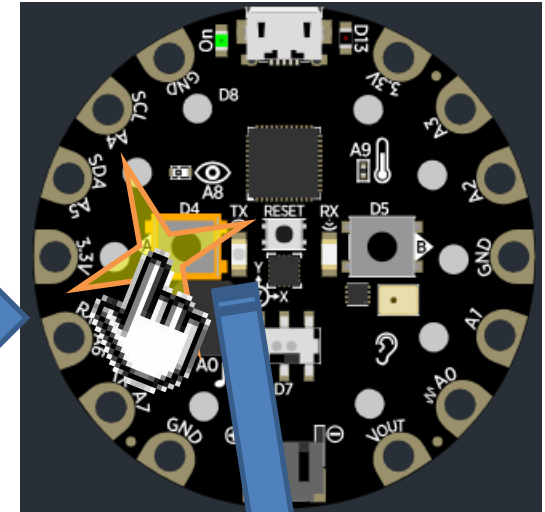
03 infraredMessage

```
on start
  clear

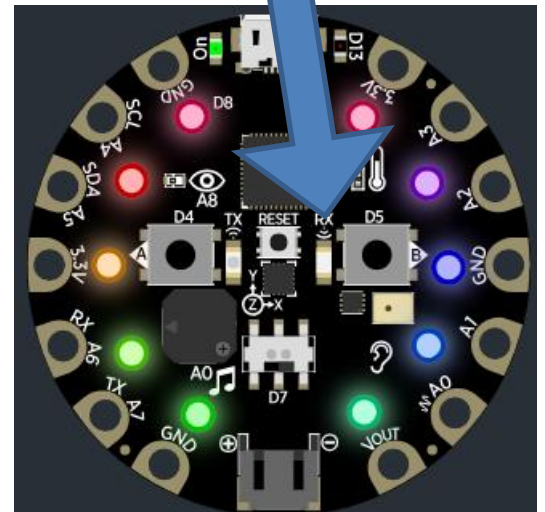
on button A click
  infrared send number 0

on button B click
  infrared send number 1

on infrared received num
  if num = 0 then
    show animation [animation] for 750 ms
    clear
  if num = 1 then
    play tone at Middle C for 1 beat
```



din



din ven

Tx sender et infrarød signal til Rx ...
Prøv med begge knapper: A og B.

04 createRandomSounds

1) Make a Variable -> mySound

2)

The image shows a Scratch script with the following blocks:

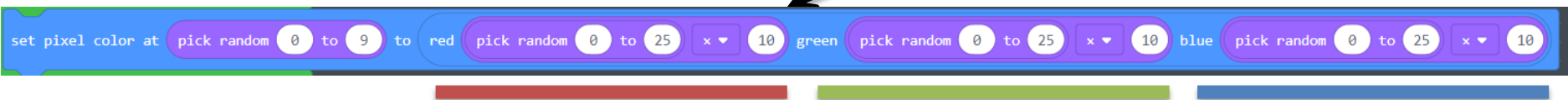
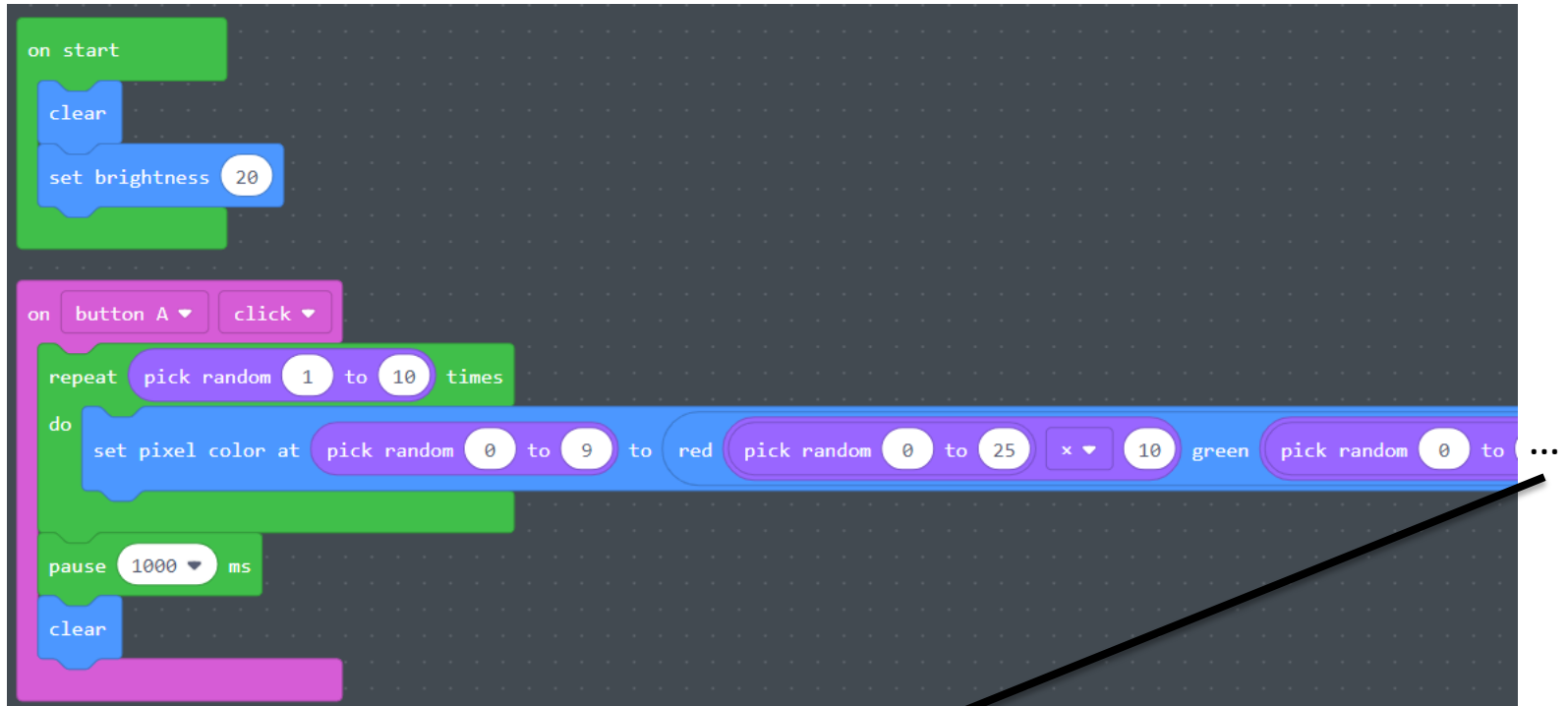
- on start** (green flag clicked):
 - set mySound to "c:1 d e f g a b"** (pink block)
- on button A click** (purple block):
 - play sound mySound** (orange block)
- on button B click** (purple block):
 - repeat pick random 3 to 6 times** (green block)
 - do** (green block):
 - ring tone at pick random 130 to 900** (orange block)
 - pause 100 ms** (green block)
 - stop all sounds** (orange block)

A black arrow points from a question mark at the bottom right to the 'pick random 130 to 900' block.

3) Prøv med begge knapper: A og B.

?

05 createRandomColors_RGB




Hver farve kan angives som 3 nummerne: **Rød-Grøn-Blå** (eksempel: rød+blå = lilla)

Prøv her: <http://web.stanford.edu/class/cs101/image-rgb-explorer.html>

(*) kig in *light*->*neopixel*

06 fireStorm


```
on start  
clear  
set brightness 60
```

```
on button A click  
show ring  
  
stop all sounds  
for index from 0 to 6  
do  
set volume index x 25  
ring tone at map index from low 0 high 6 to low 200 high 450  
repeat 8 times  
do  
(* onboard strip rotate by 1  
pause map index from low 0 high 6 to low 80 high 10 ms  
set brightness 250  
show ring
```

x 6



Make a Variable -> index

```
show ring  
  
stop all sounds  
rest for 1/4 beat  
play tone at Middle A# for 2 beat  
stop all sounds  
clear  
set brightness 60
```

Før vi går idag...

- Husk at gemme hele programmer på g-drev