Hack Nights: Physical Computing

FACTLab 2016

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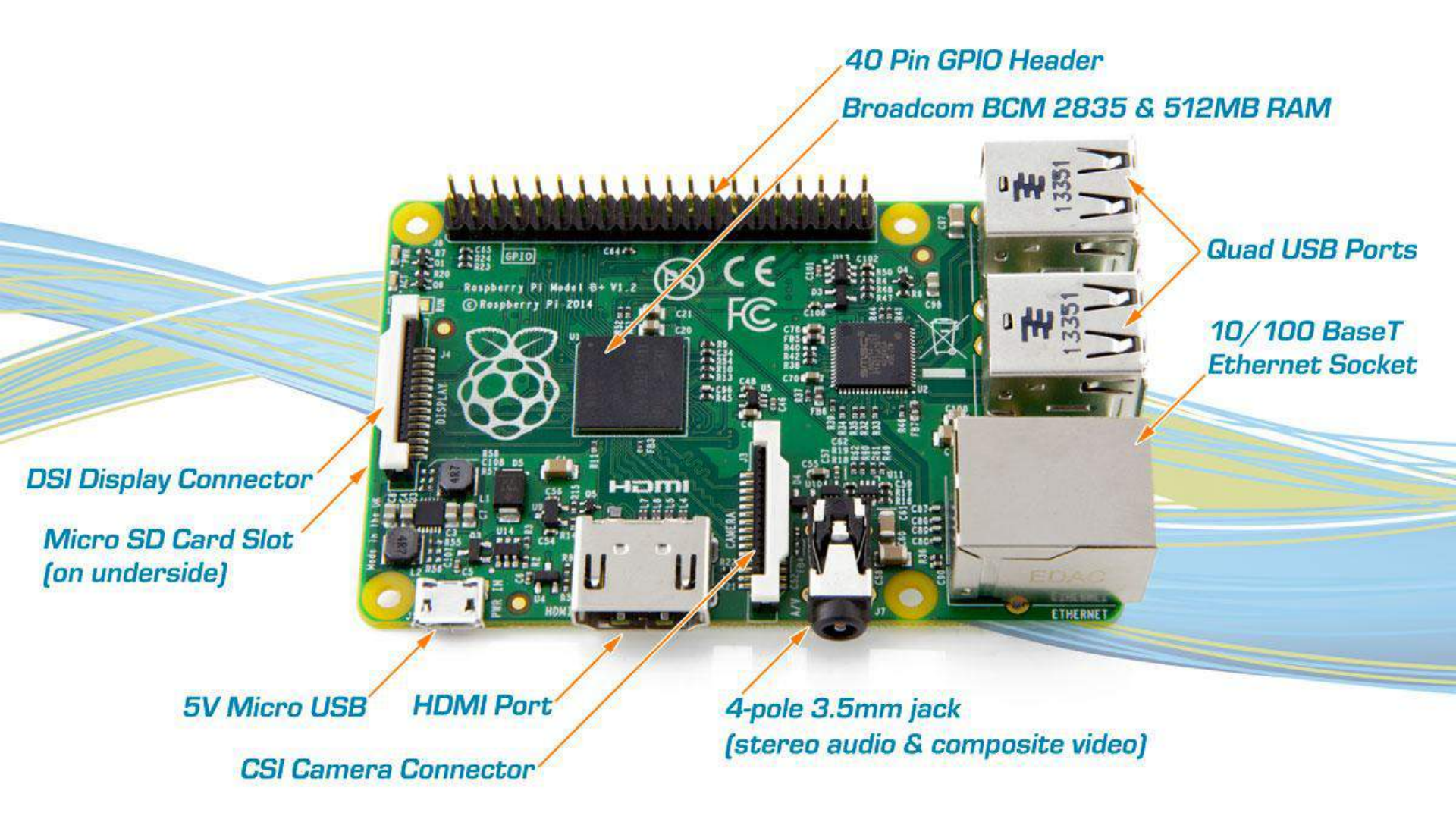
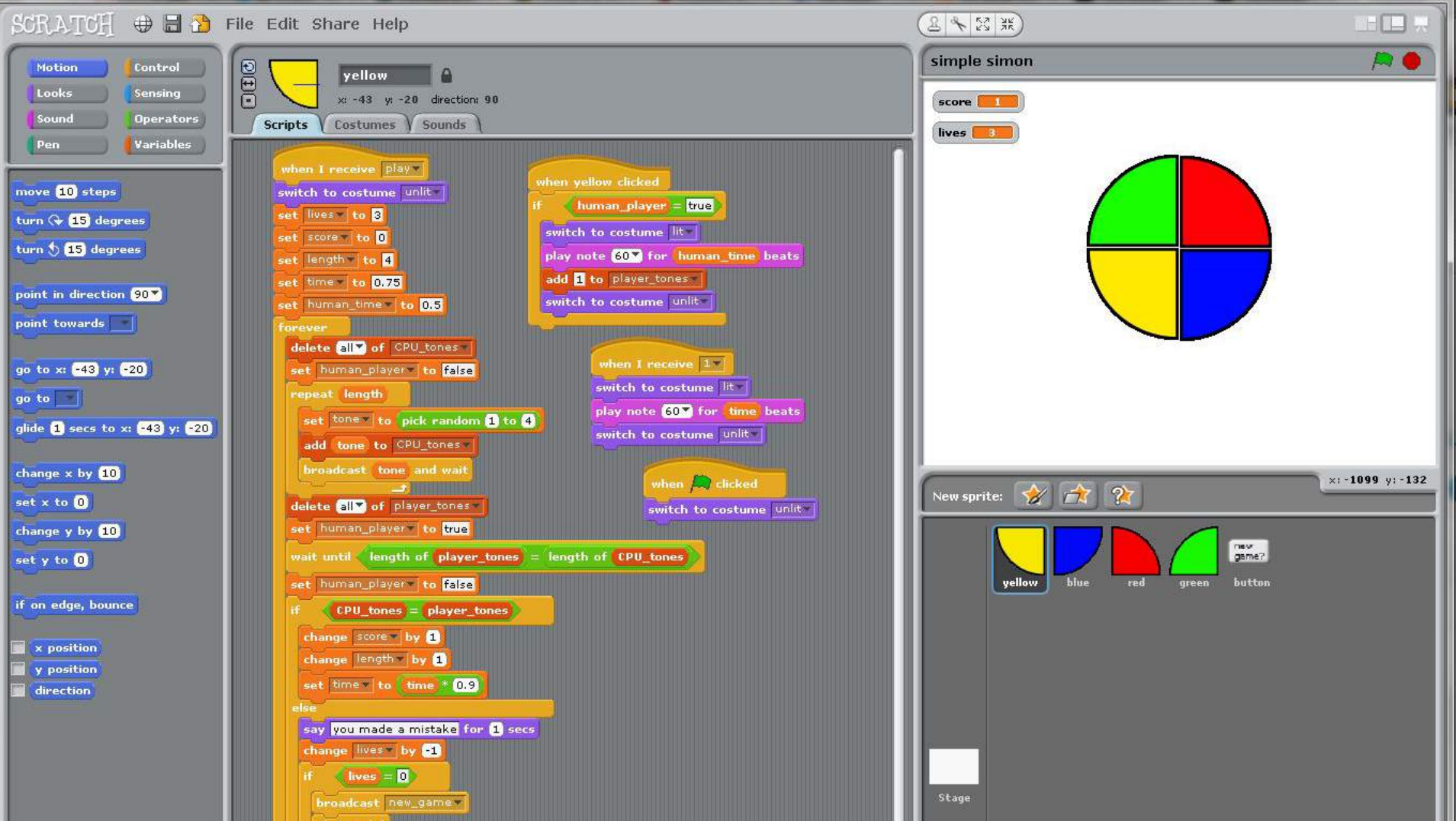
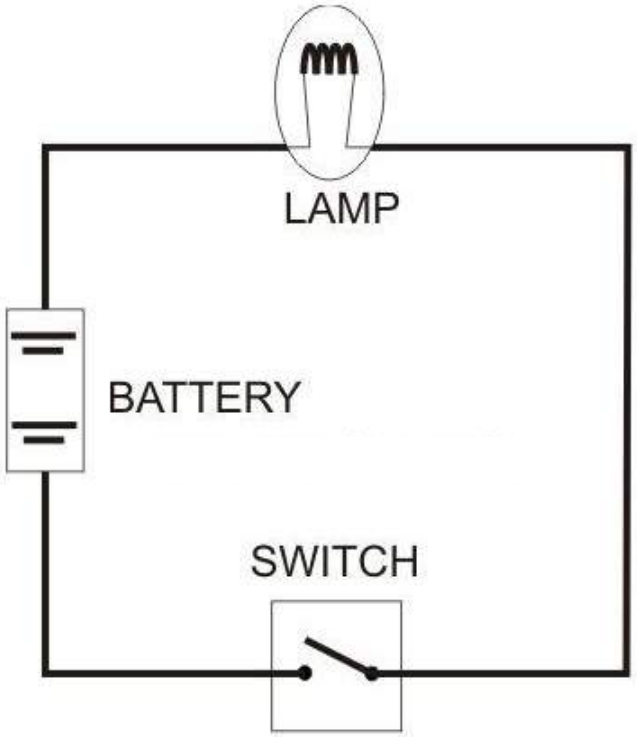
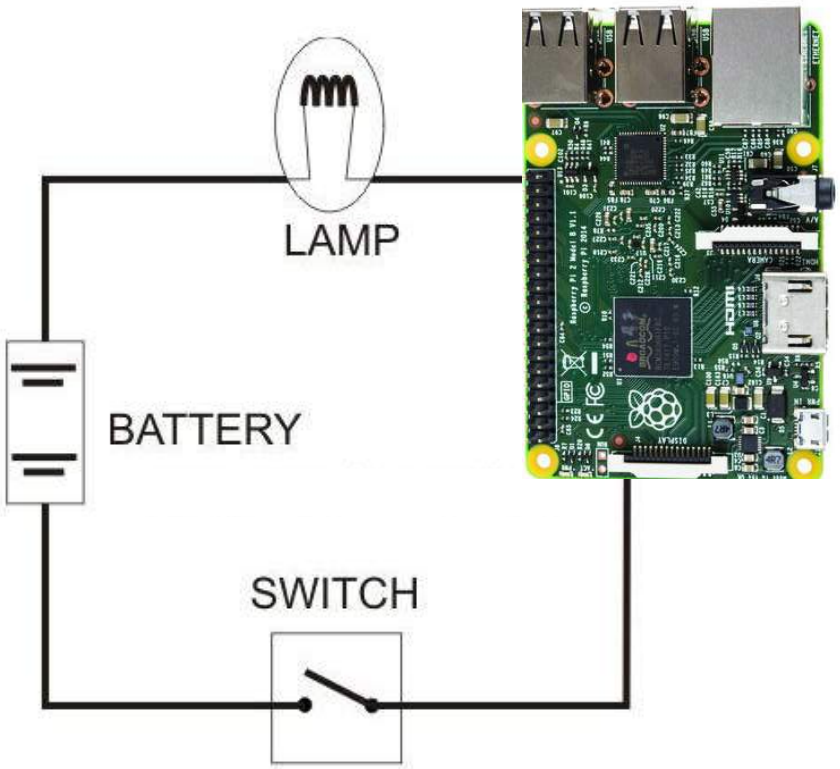

40 Pin GPIO Header
Broadcom BCM 2835 & 512MB RAM
Quad USB Ports
10/100 BaseT
Ethernet Socket
DSI Display Connector
Micro SD Card Slot
(on underside)
5V Micro USB
HDMI Port
CSI Camera Connector
4-pole 3.5mm jack
(stereo audio & composite video)
GPIO
Raspberry Pi Model B+ V1.2
©Raspberry Pi 2014
DISPLAY
HDMI
CAMERA
ETHERNET

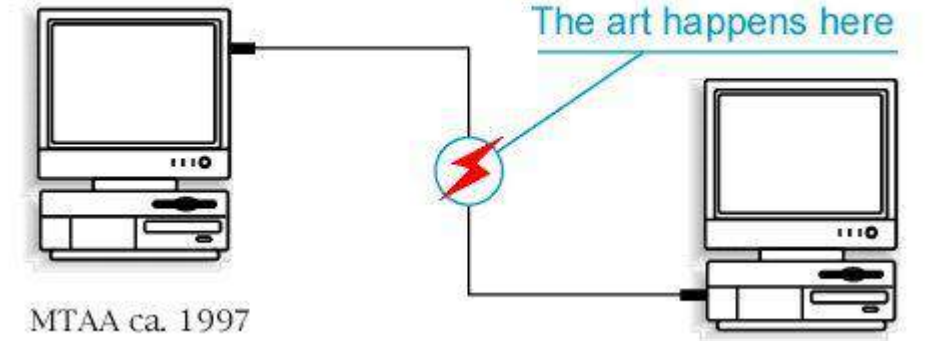
1978


SCRATCH
File Edit Share Help
Motion
Control
Looks
Sensing
Sound
Operators
Pen
Variables
move 10 steps
turn 15 degrees
turn 15 degrees
point in direction 90
point towards
go to x: -43 y: -20
go to
glide 1 secs to x: -43 y: -20
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
x position
y position
direction
yellow
x: -43 y: -20 direction: 90
Scripts
Costumes
Sounds
when I receive play
switch to costume unlit
set lives to 3
set score to 0
set length to 4
set time to 0.75
set human_time to 0.5
forever
delete all of CPU_tones
set human_player to false
repeat length
set tone to pick random 1 to 4
add tone to CPU_tones
broadcast tone and wait
delete all of player_tones
set human_player to true
wait until length of player_tones = length of CPU_tones
set human_player to false
if CPU_tones = player_tones
change score by 1
change length by 1
set time to time * 0.9
else
say you made a mistake for 1 secs
change lives by -1
if lives = 0
broadcast new_game
when yellow clicked
if human_player = true
switch to costume lit
play note 60 for human_time beats
add 1 to player_tones
switch to costume unlit
when I receive 1
switch to costume lit
play note 60 for time beats
switch to costume unlit
when clicked
switch to costume unlit
simple simon
score 1
lives 3
New sprite:
x: -1099 y: -132
yellow
blue
red
green
button
Stage

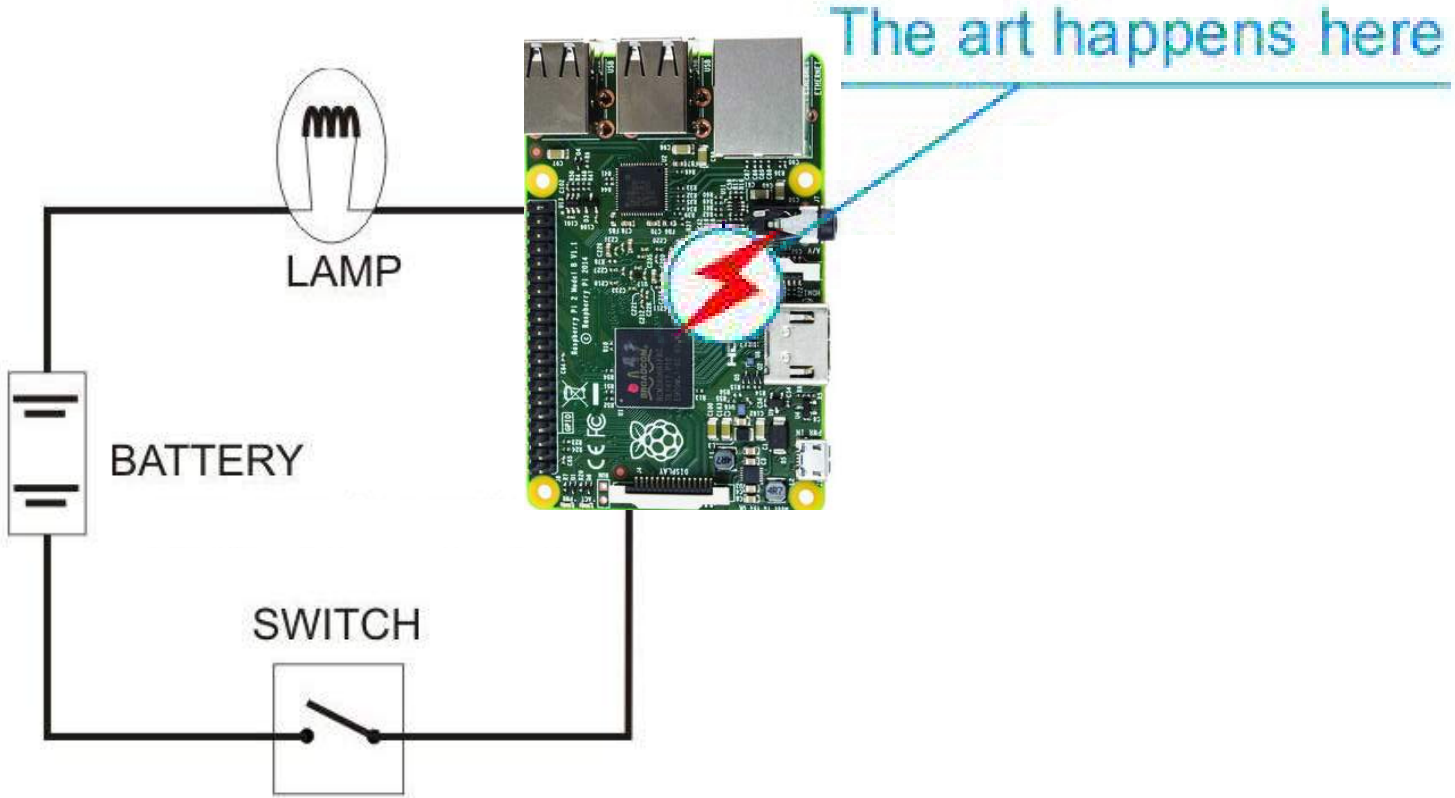

LAMP
BATTERY
SWITCH


LAMP
BATTERY
SWITCH

Simple Net Art Diagram

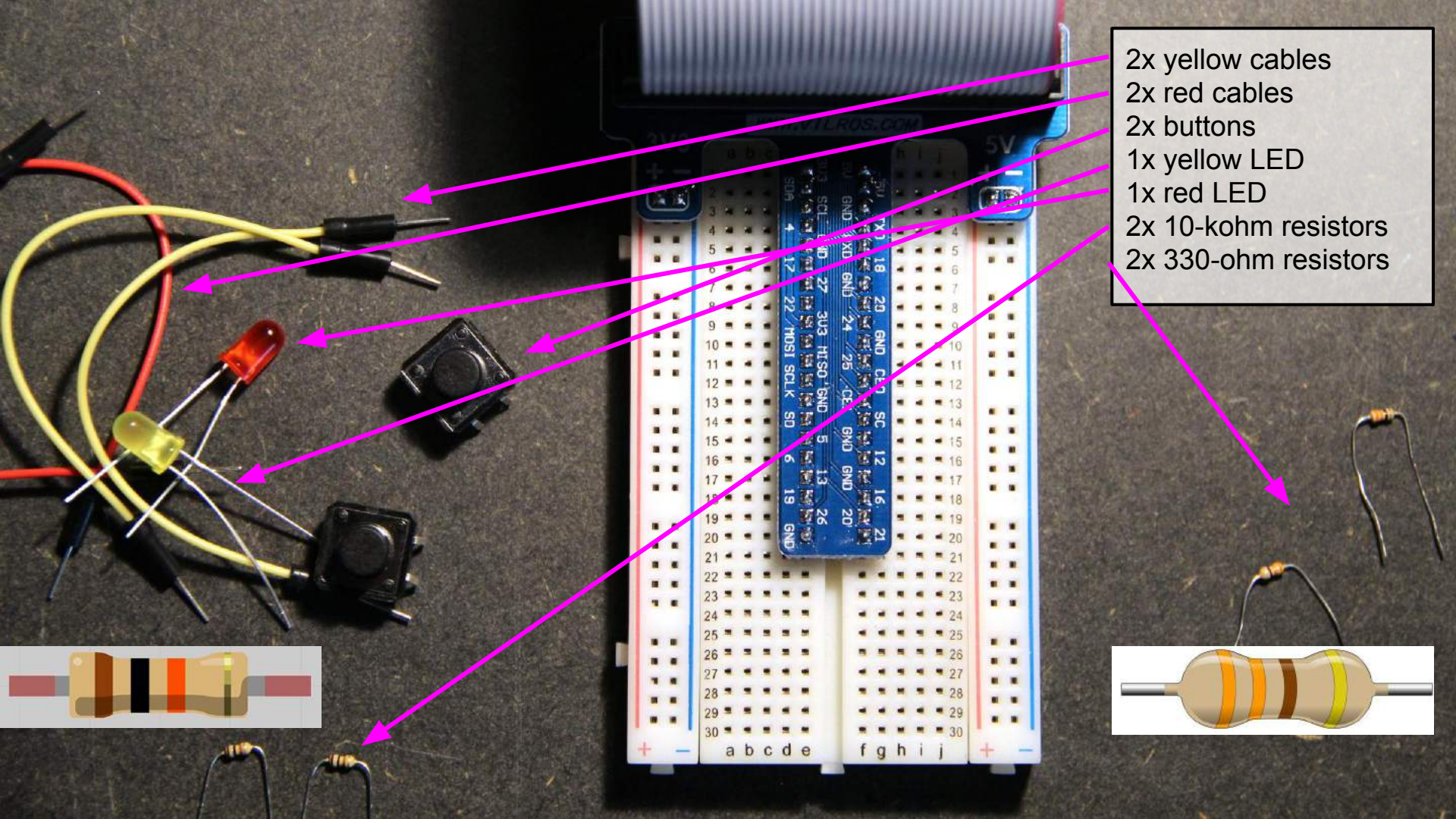


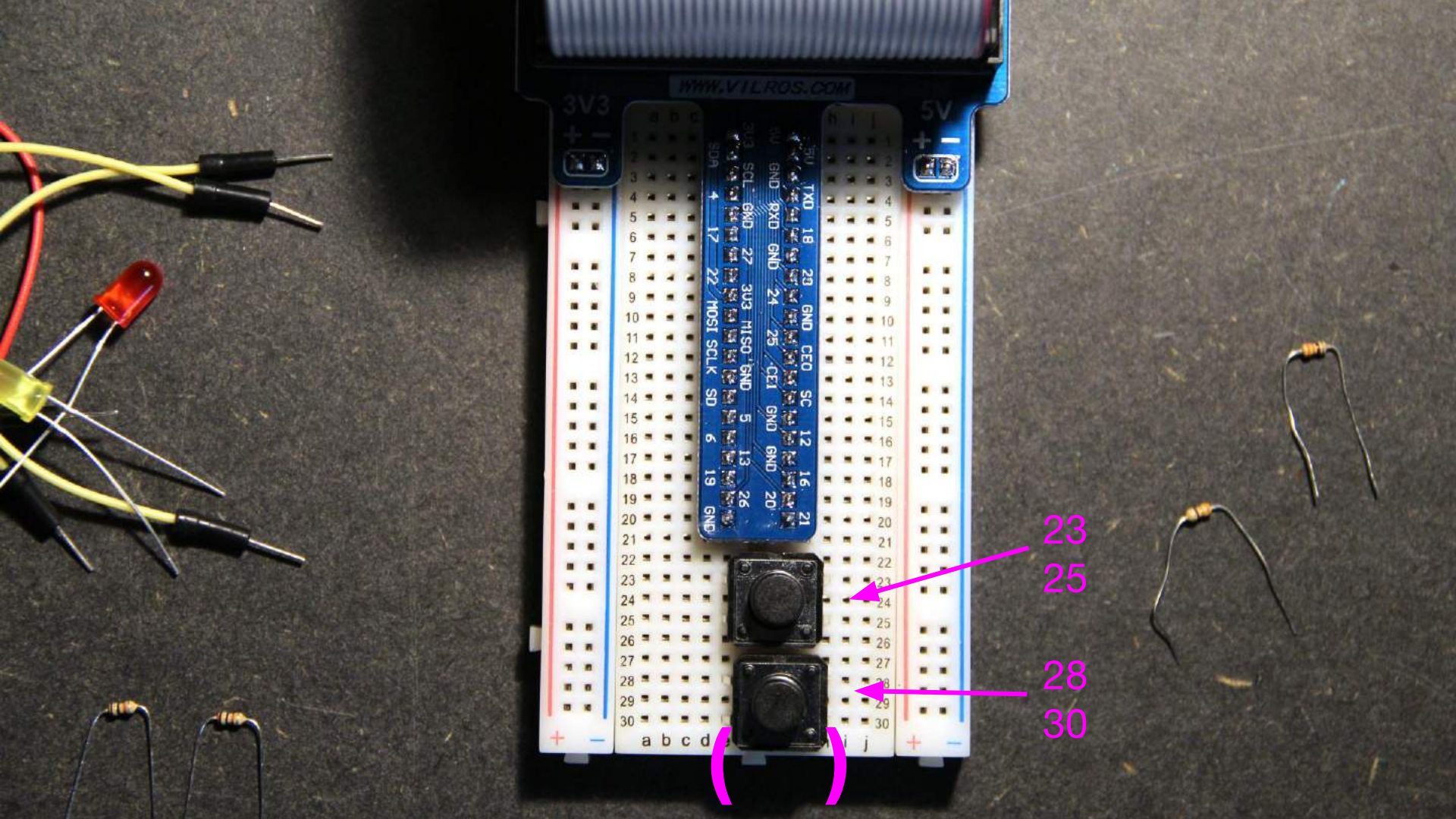
MTAA ca. 1997

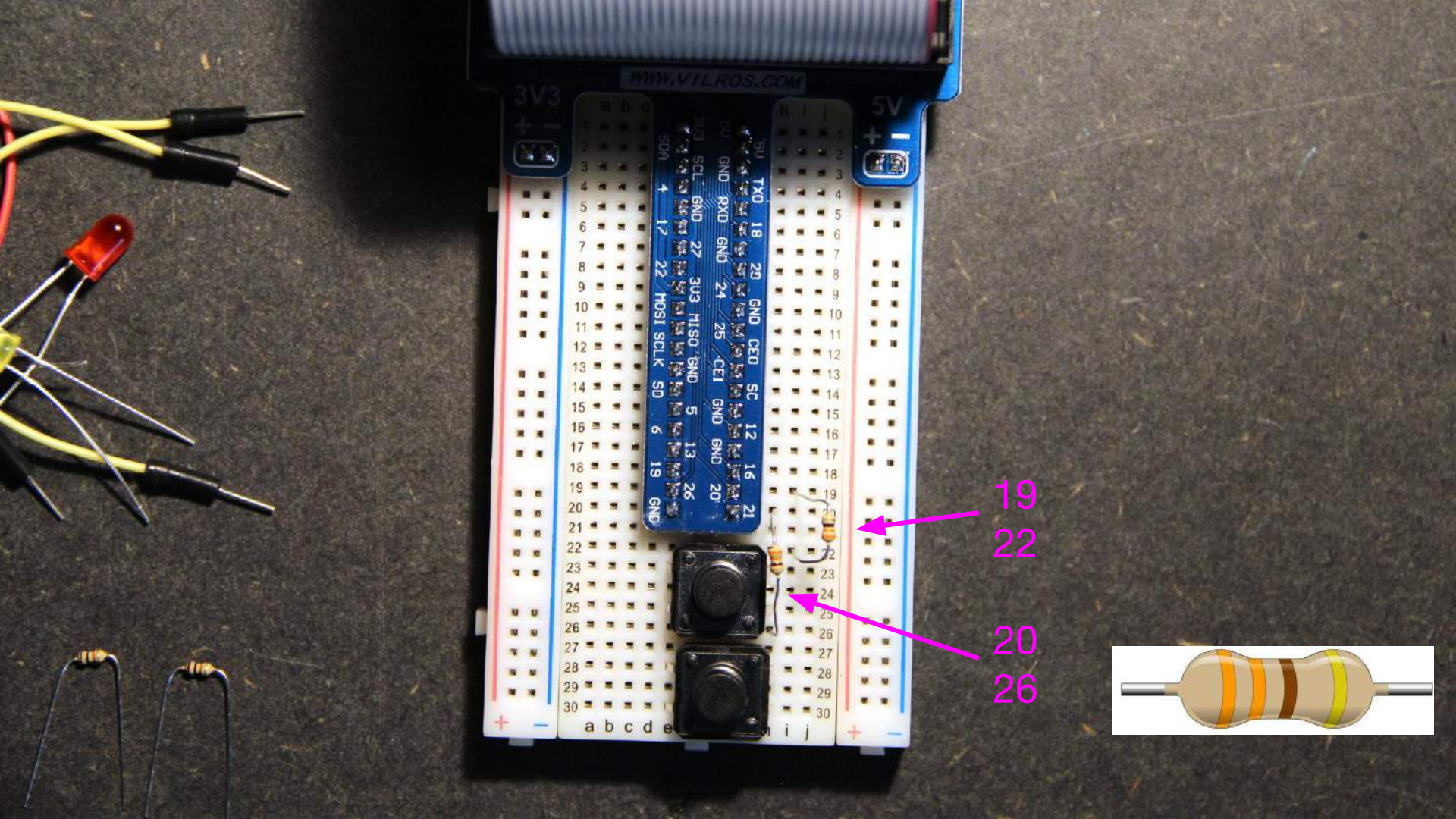

The art happens here
LAMP
BATTERY
SWITCH

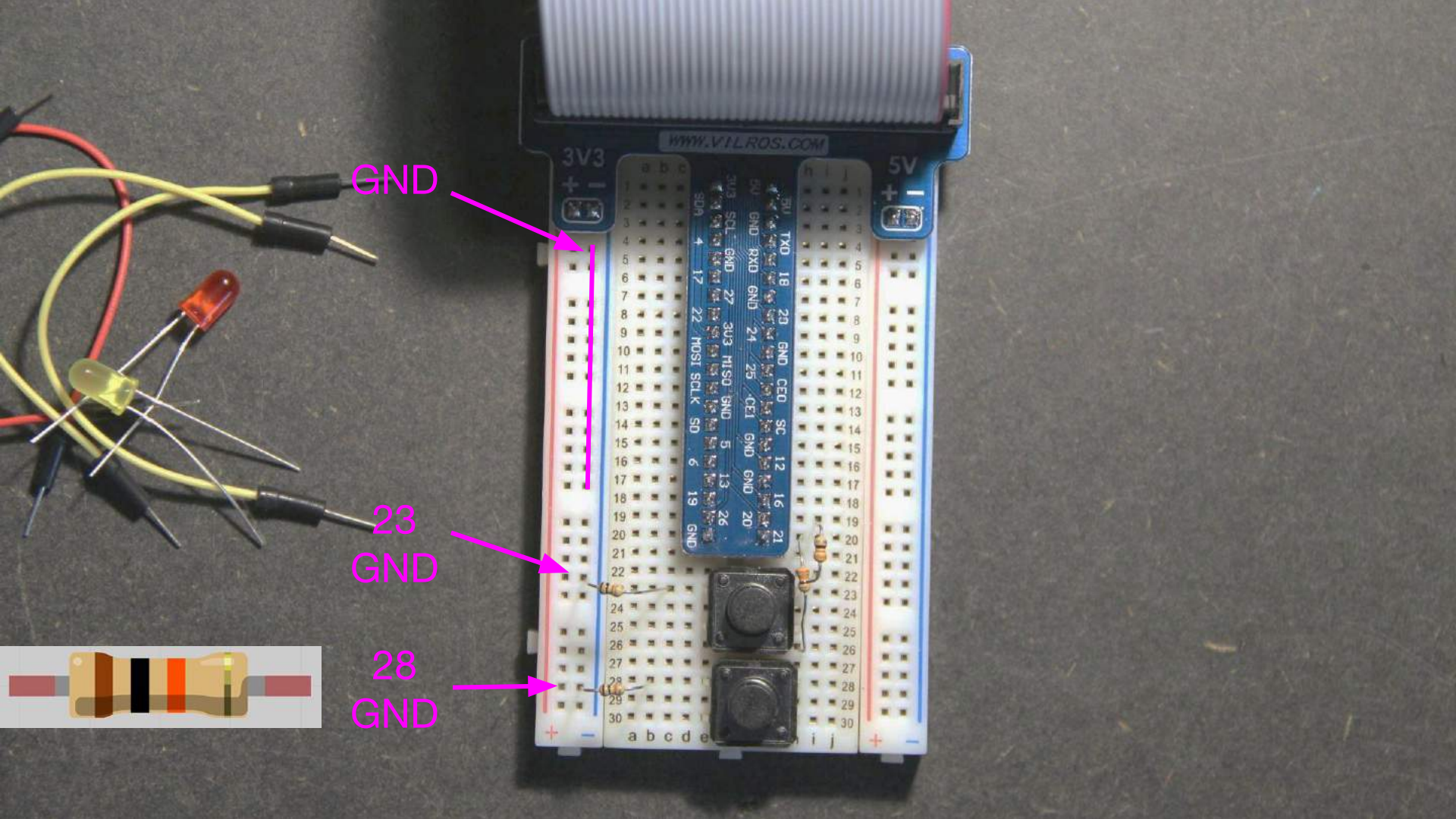
3V3
5V
5V TXD 18 20 GND CE0 SC 12 16 21
5V GND RXD GND 24 25 CE1 GND GND 20
3V3 SCL GND 27 3V3 MISO GND 5 13 26
SDA 1 17 22 MOSI SCLK SD 6 19 GND
a b c d e
f g h i j

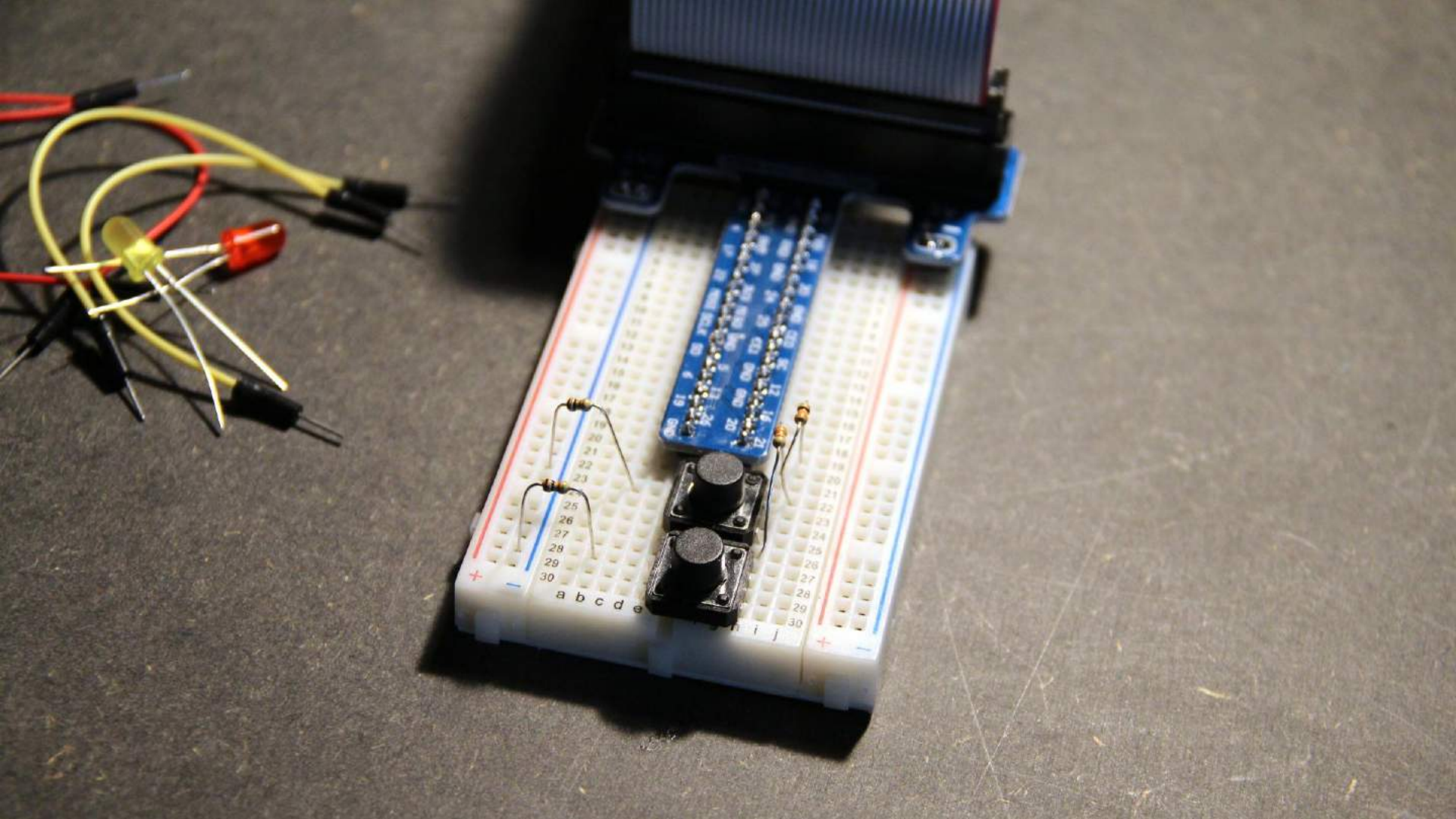
WWW.VILROS.COM
3V3
5V
5V TXD 18 23 GND CE0 SC 12 16 21
5V GND RXD GND 24 25 CE1 GND GND 20
3V3 SCL GND 27 3V3 MISO GND 5 13 26
SDA 4 17 22 MOSI SCLK SD 6 19 GND

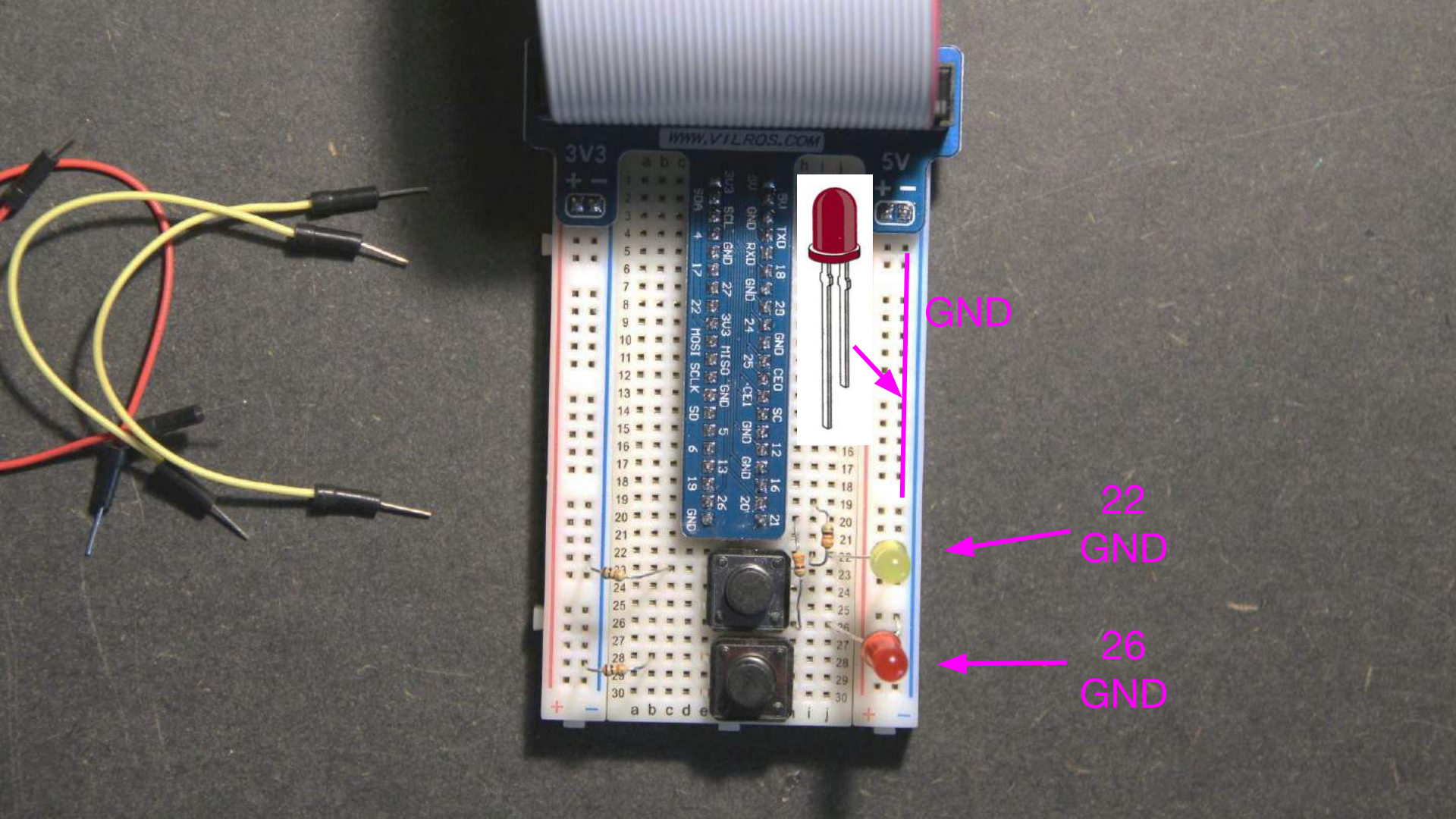

2x yellow cables
2x red cables
2x buttons
1x yellow LED
1x red LED
2x 10-kohm resistors
2x 330-ohm resistors

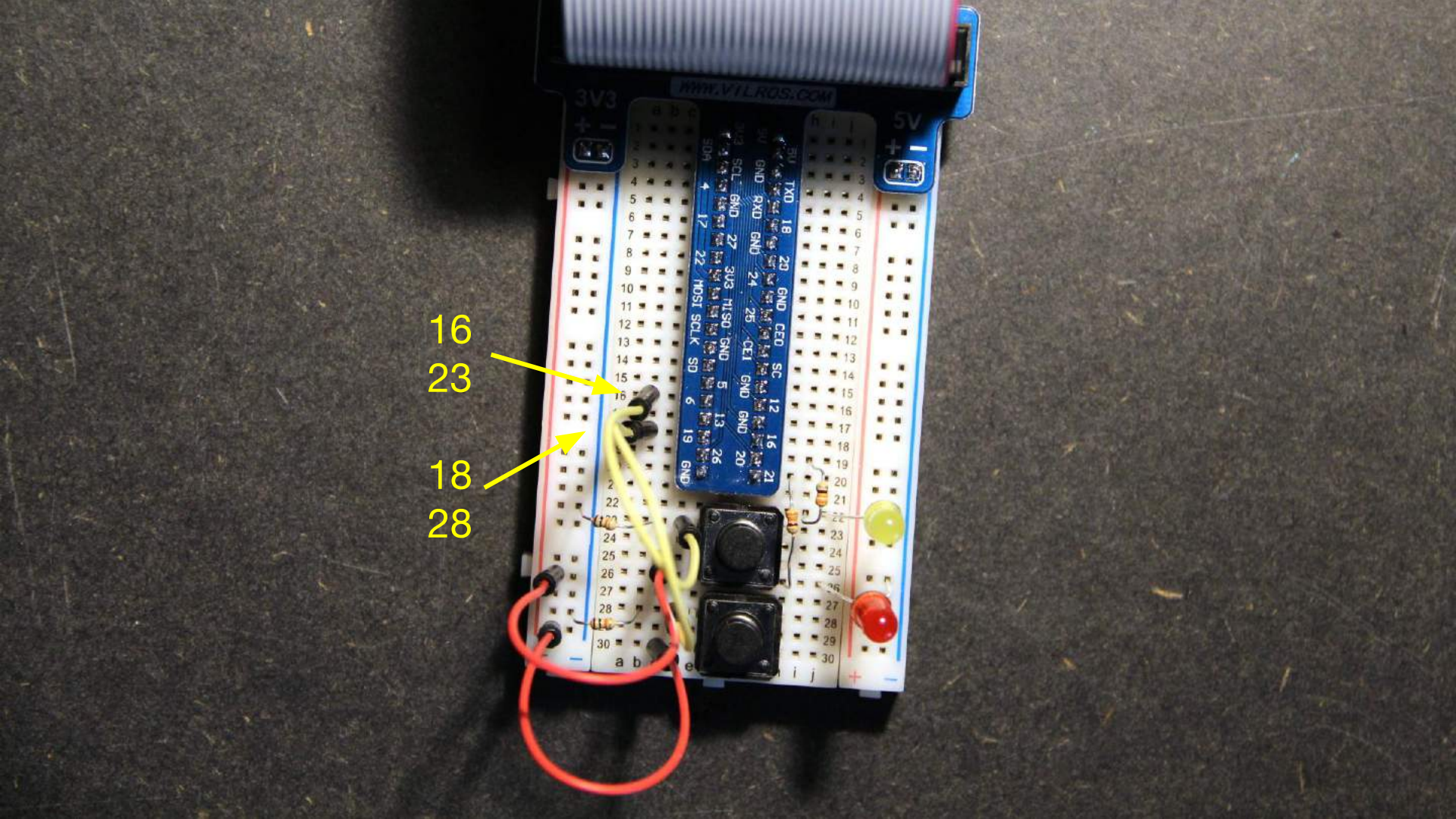

WWW.VILROS.COM
3V3
5V
23
25
28
30

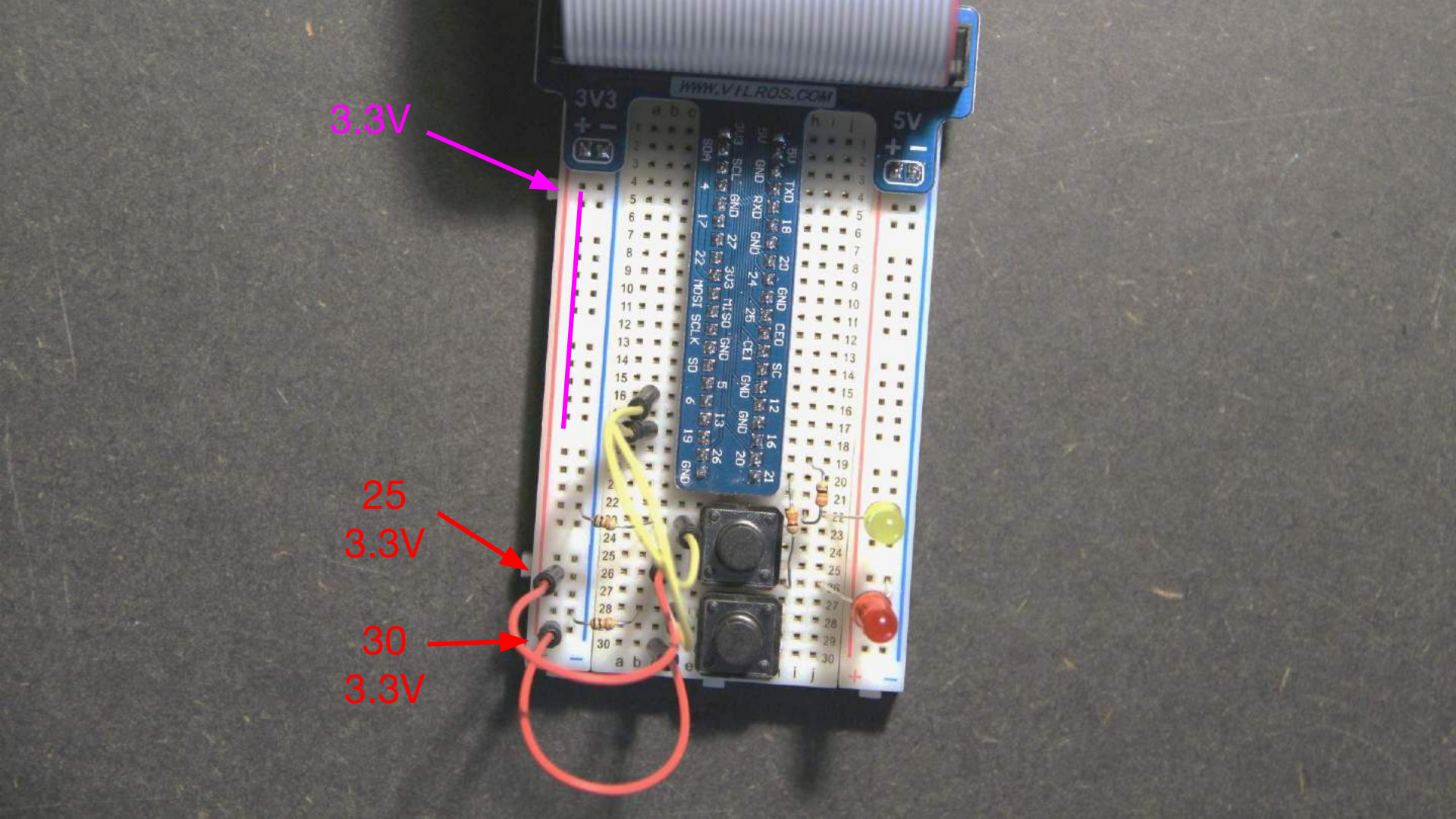

WWW.VILROS.COM
3V3
5V
5V TXD 18 28 GND CE0 SC 12 16 21
GND RXD GND 24 25 CE1 GND GND 20
3V3 SCL GND 27 3V3 MISO GND 5 13 26
SDA 4 17 22 MOSI SCLK SD 6 19 GND
19
22
20
26


GND
23
GND
28
GND
WWW.VILROS.COM
3V3
5V

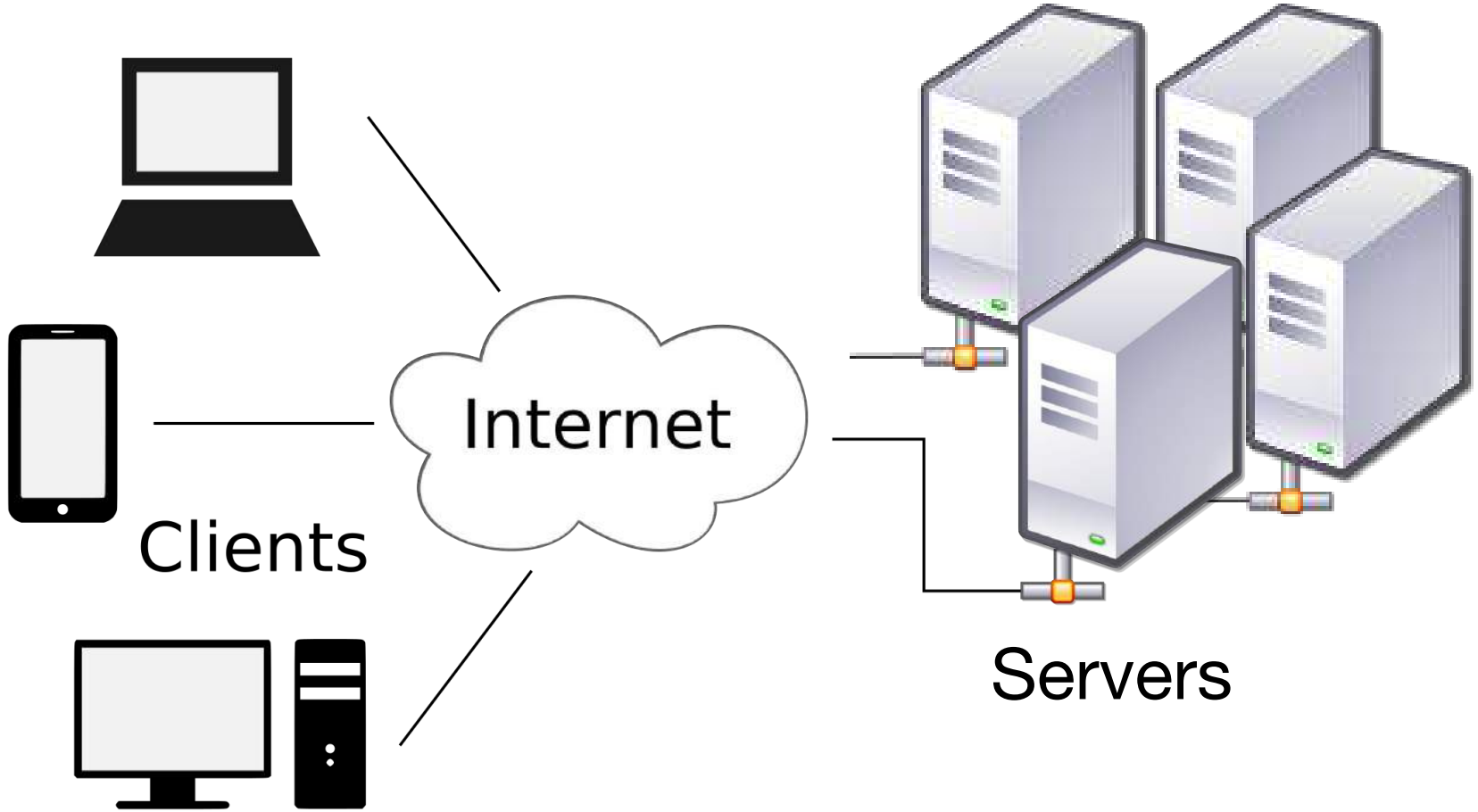



GND
22
GND
26
GND

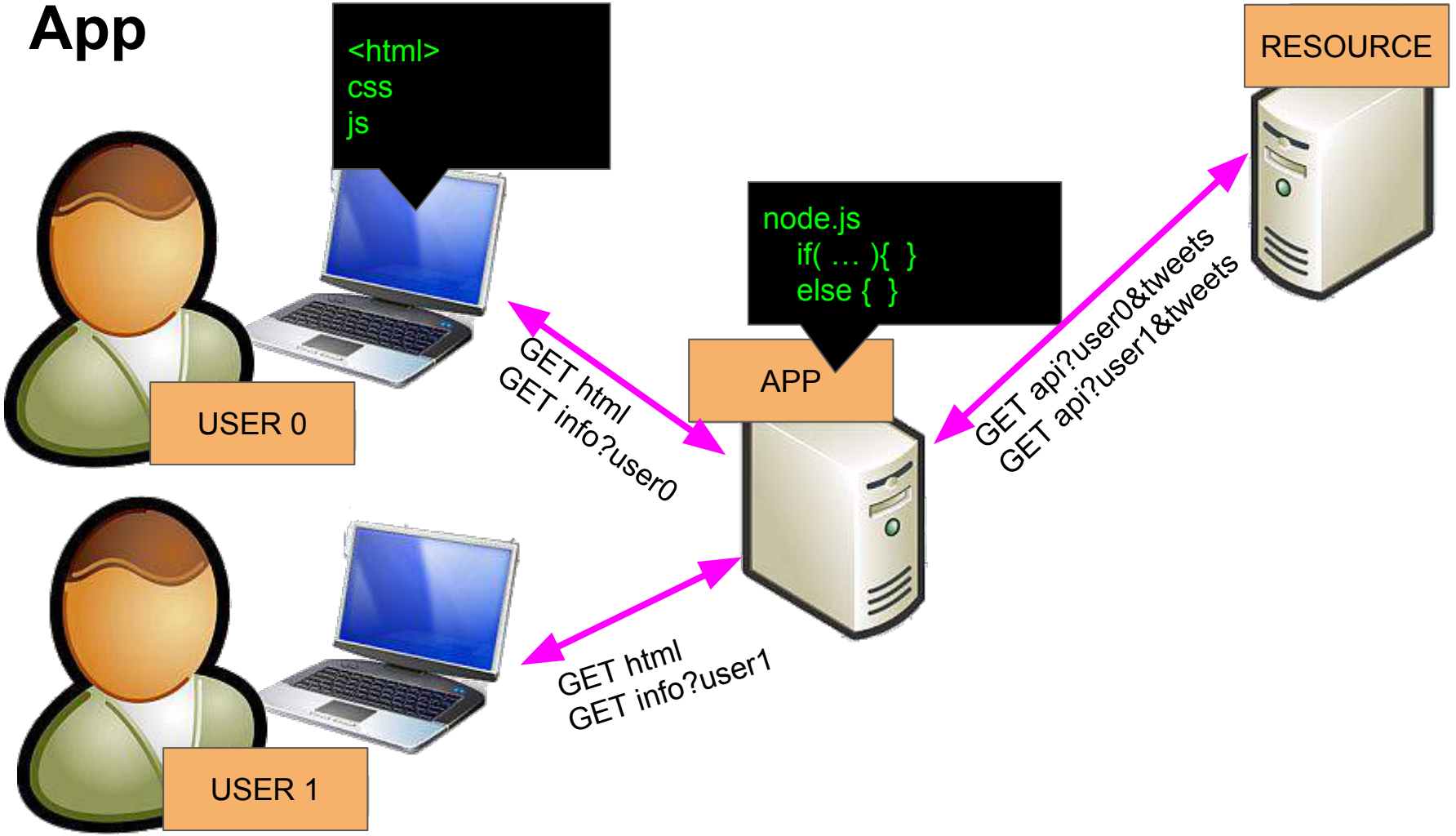

16
23
18
28


3.3V
25
3.3V
30
3.3V
WWW.VILROS.COM
3V3
5V

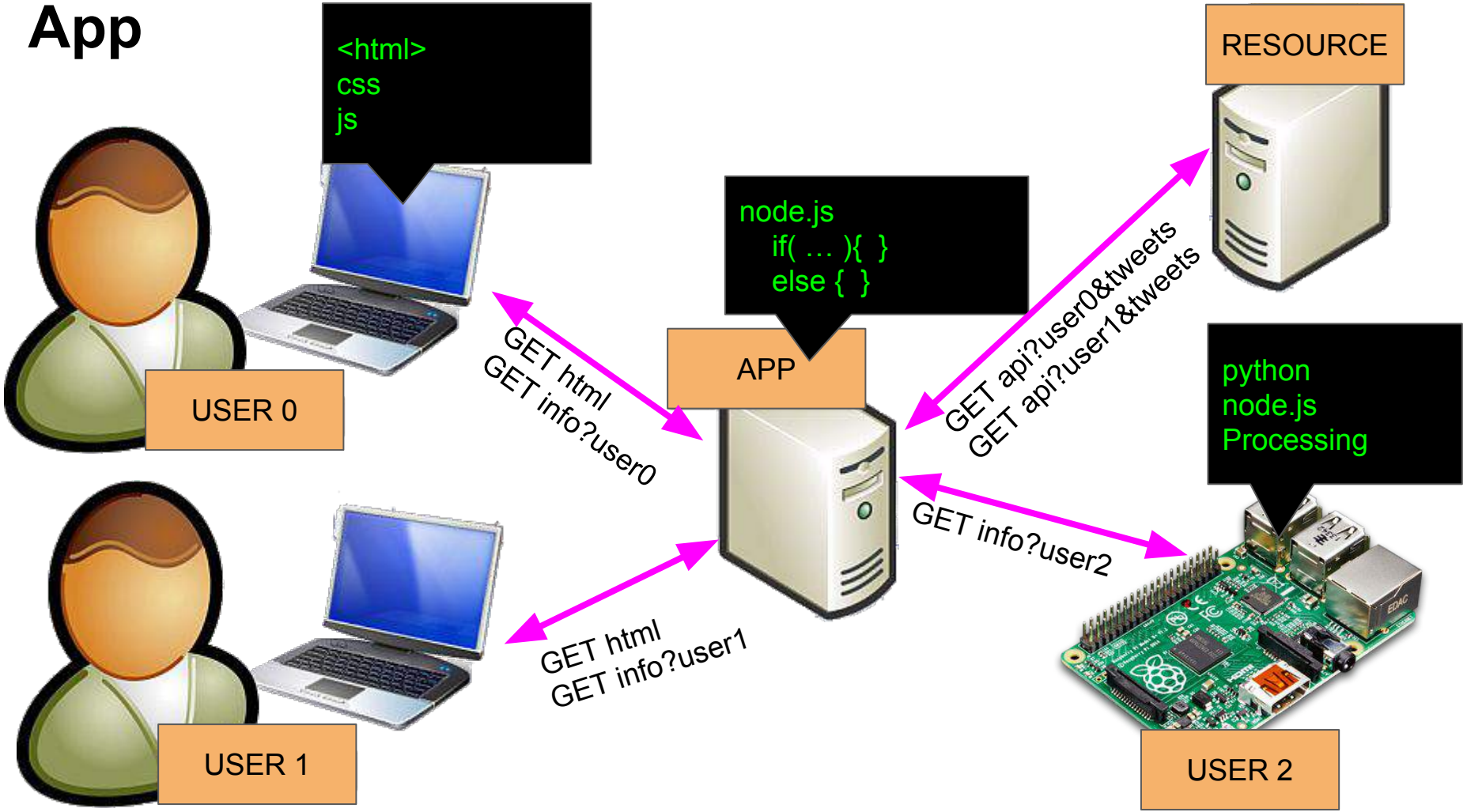
The Internet



App


<html>
css
js
node.js
if(…){ }
else { }
RESOURCE
APP
USER 0
USER 1
GET html
GET info?user0
GET html
GET info?user1
GET api?user0&tweets
GET api?user1&tweets

App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RESOURCE
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USER 1
USER 2
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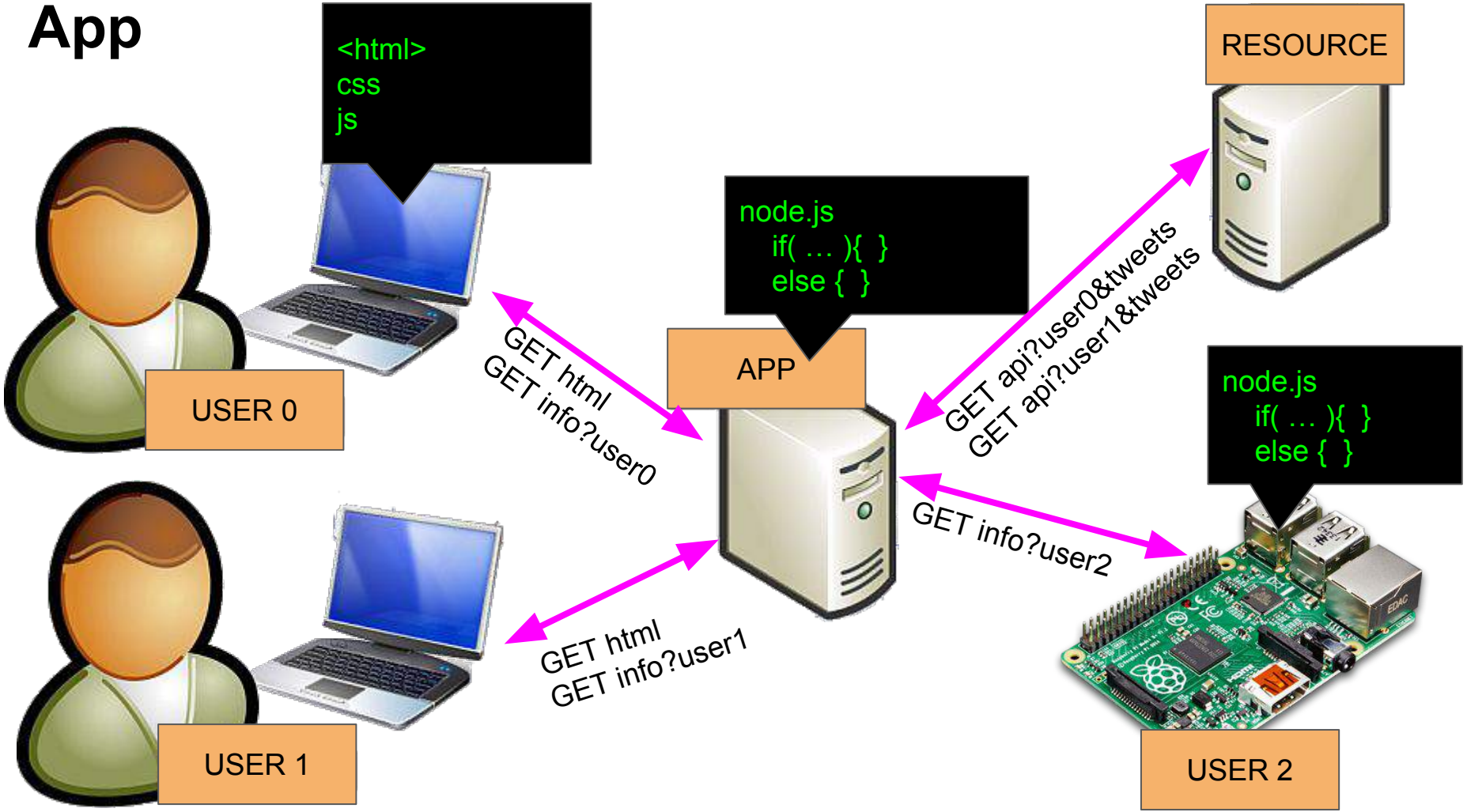
GET info?user0
GET api?user0&tweets
GET api?user1&tweets
GET info?user2
GET html
GET info?user1
python
node.js
Processing

App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