



Introduction to Tinkercad

KU1202 Pengantar Rekayasa dan Desain

K-20

Sekolah Teknik Elektro dan Informatika
Institut Teknologi Bandung

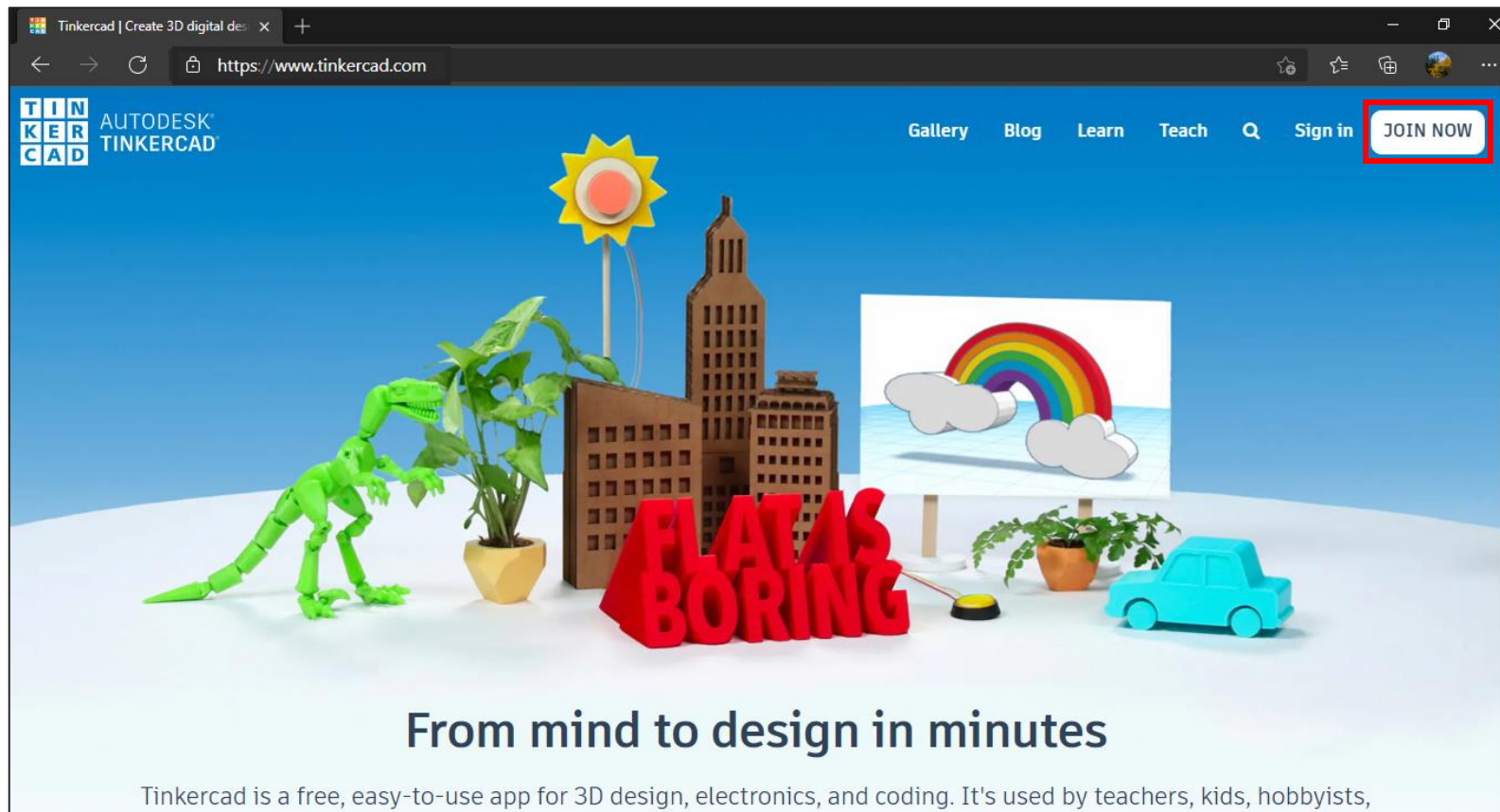
Overview

- Create Account
- Screen Name
- Getting Started
- Components
- Tinkercad Circuits

Create Account

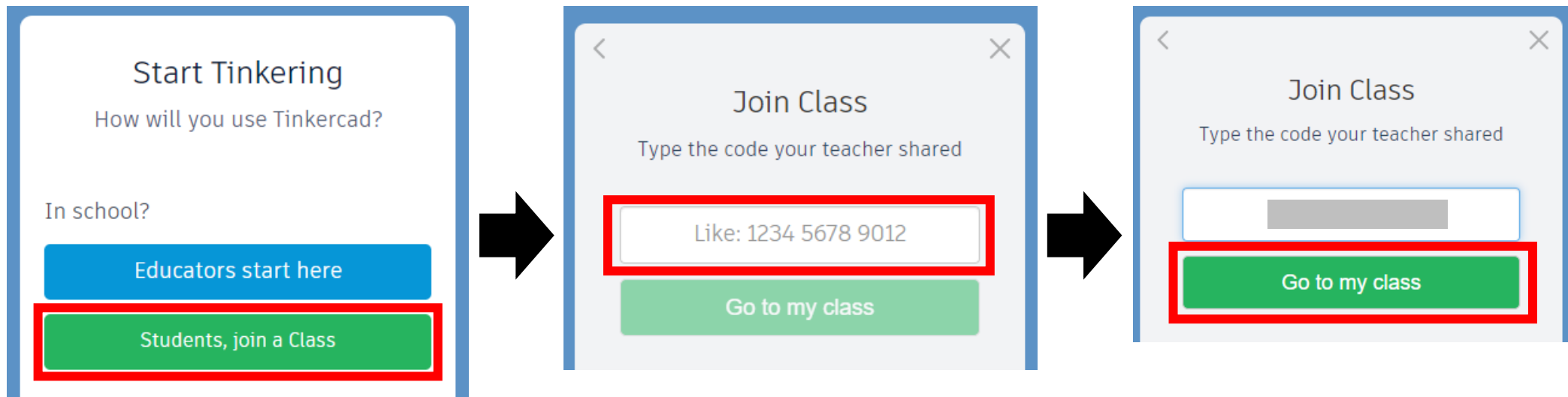
Create Account [1/6]

- Buka link [tinkercad.com](https://www.tinkercad.com), pilih **JOIN NOW**.



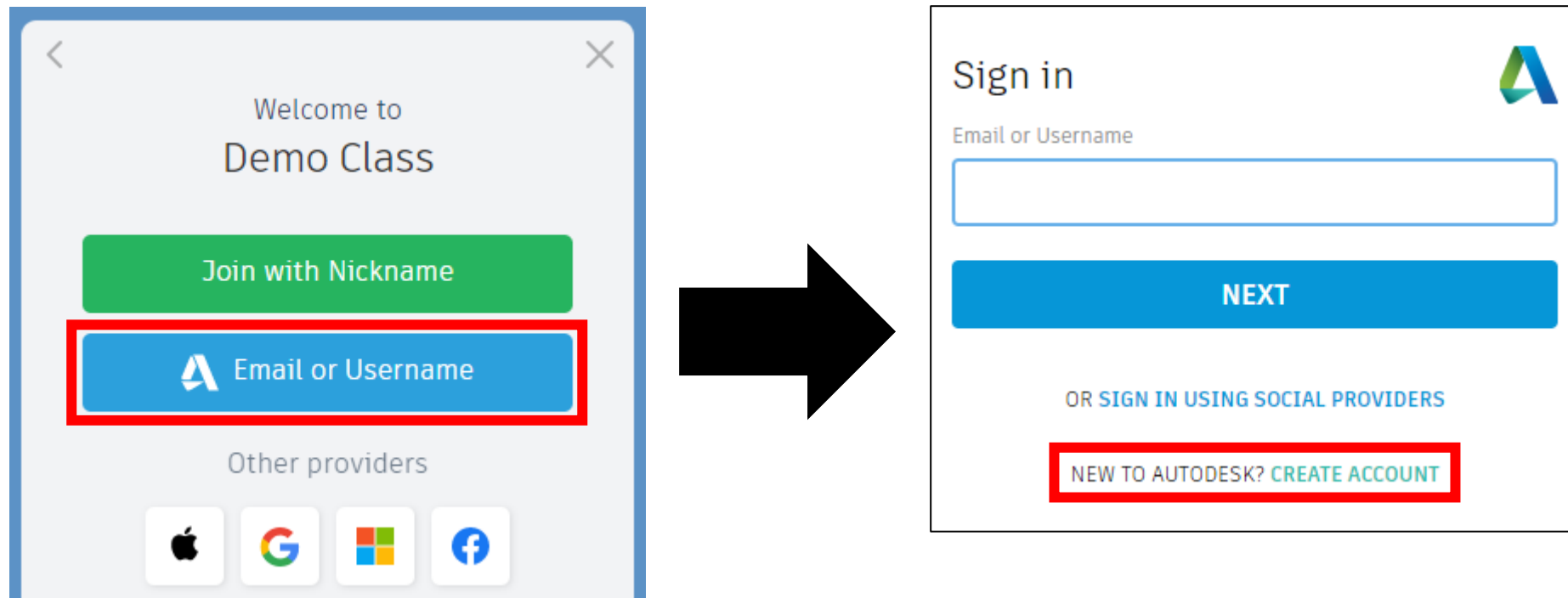
Create Account [2/6]

- Pilih **Students, join a Class**, masukan **kode kelas** yang telah diberikan, kemudian klik **Go to my class**.



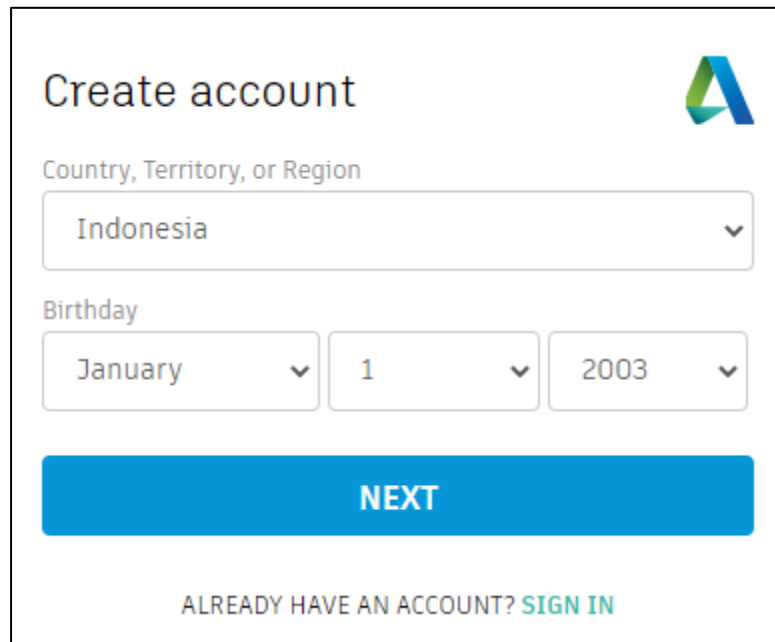
Create Account [3/6]

- Pilih **Email or Username**, kemudian pilih **CREATE ACCOUNT**.



Create Account [4/6]

- Pilih **nama negara** dan **tanggal lahir**, kemudian tuliskan **email** dan **password**, kemudian klik **CREATE ACCOUNT**.



Create account

Country, Territory, or Region

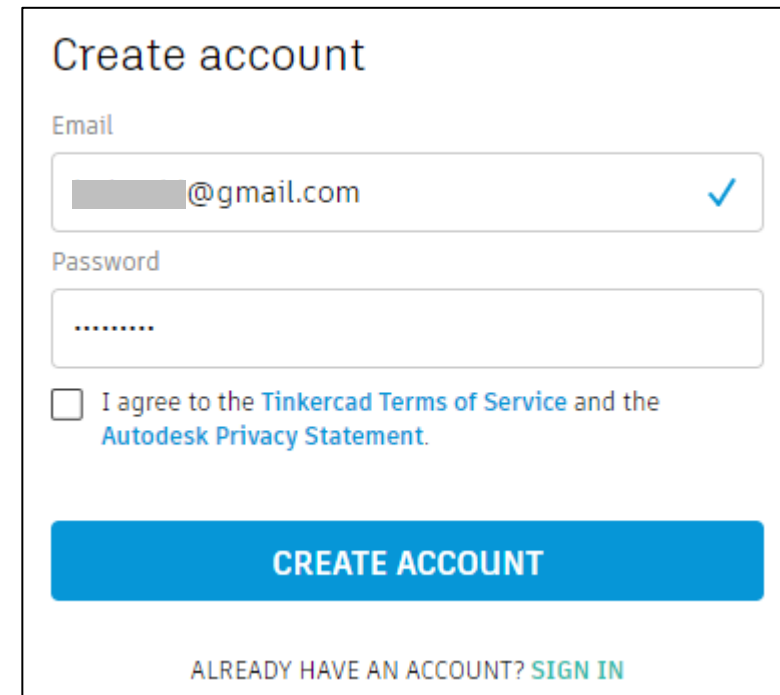
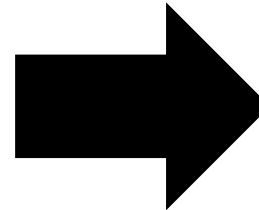
Indonesia

Birthday

January 1 2003

NEXT

ALREADY HAVE AN ACCOUNT? [SIGN IN](#)



Create account

Email

@gmail.com

Password

.....

☐ I agree to the [Tinkercad Terms of Service](#) and the [Autodesk Privacy Statement](#).

CREATE ACCOUNT

ALREADY HAVE AN ACCOUNT? [SIGN IN](#)

Create Account [5/6]

- Kemudian muncul notifikasi bahwa akun telah dibuat.

Account created

This single account gives you access to all your Autodesk products



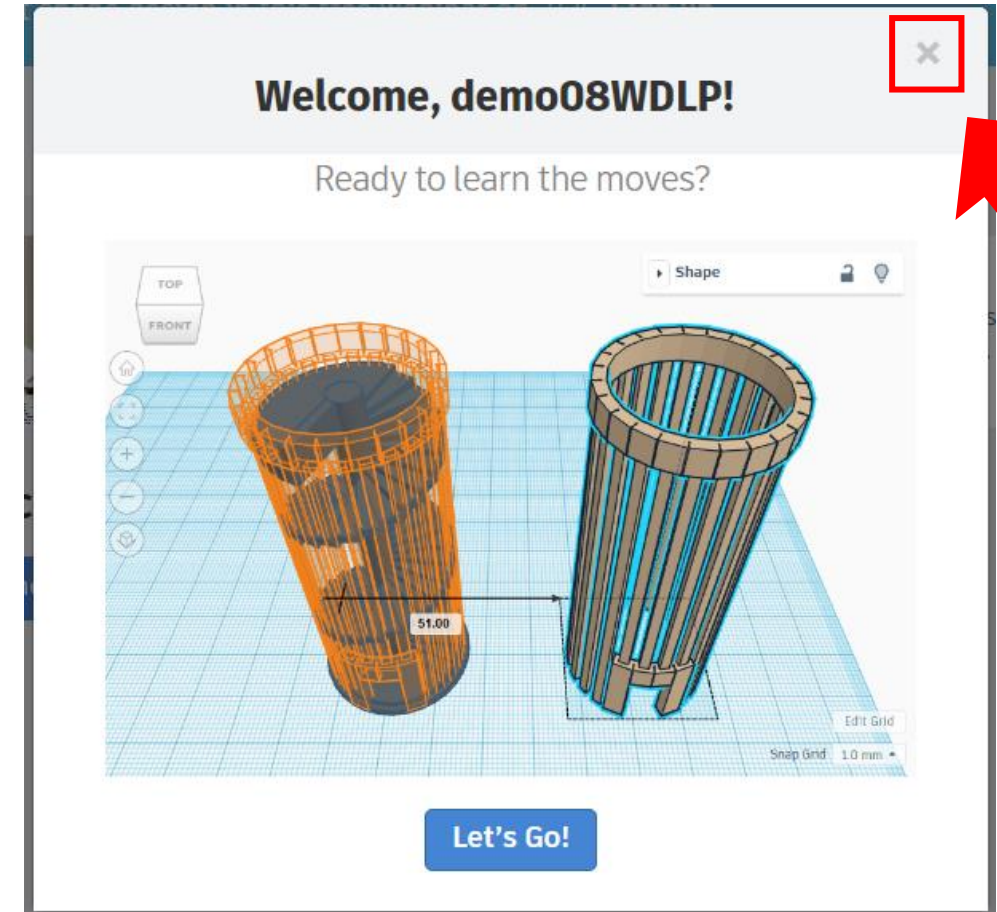
☐ Thank you for your interest in Autodesk. Check this box to receive electronic messages (including marketing e-mails at the address you provided) from Autodesk, including on emerging trends, events, solutions and exclusive opportunities. Autodesk will personalize the content we send you based on how you interact with our messages. You are in control. [Manage](#) your preference or [unsubscribe](#) at anytime. View Autodesk's [contact information](#) and [privacy statement](#).

DONE



Create Account [6/6]

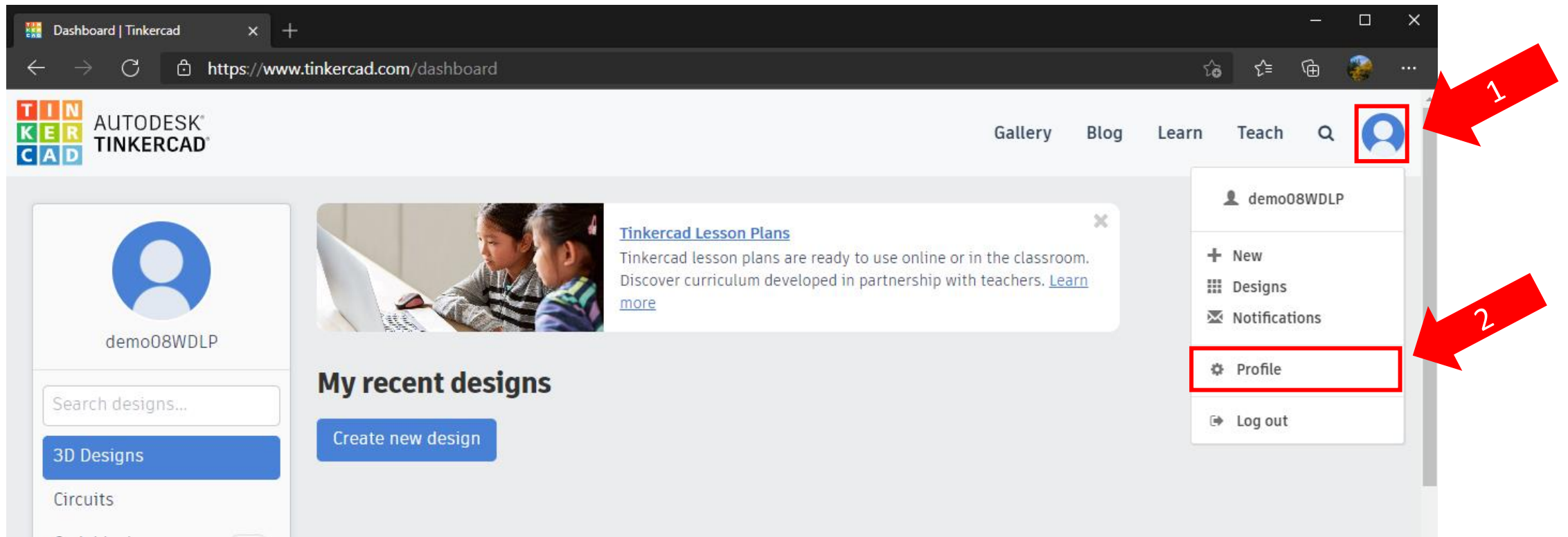
- Kemudian muncul Welcome, klik tanda X di kanan atas, lewati tutorial ini.
 - Masih dapat dibuka di lain waktu
 - Fokus ke **Circuits**, bukan 3D Designs



Screen Name

Update Screen Name [1/3]

- Klik **icon avatar** di kanan atas, kemudian pilih **Profile**.



Update Screen Name [2/3]

- Ubah **Screen name** menjadi **NIM (spasi) Nama Lengkap**.

ACCOUNT SETTINGS

Personal information

Kids

Picture

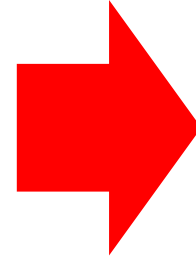


No file chosen

Screen name*:

Email*:

Used as login, not shown to others



Picture



No file chosen

Screen name*:

Email*:

Used as login, not shown to others

Update Screen Name [3/3]

- **Simpan** perubahan, klik tombol **Save Changes** di kanan bawah.

Picture



No file chosen

Screen name*:

Email*:

Used as login, not shown to others

Little bit about you:

How will you use Tinkercad?:

Getting Started

Dashboard



- **3D Designs:** membuat model 3D
- **Circuits:** membuat rangkaian listrik, termasuk Arduino dengan pemrograman menggunakan block atau script, kemudian simulasi
- **CodeBlocks:** memprogram/otomatisasi pembuatan model 3D
- **Lessons:** kumpulan tutorial/materi yang telah dikerjakan

Create Circuit

1 Membuat rangkaian listrik

2 Tutorial awal (*Getting Started*)

3 Membuat rangkaian baru (*blank workspace*)

Work Area

Notes

Undo/Redo

Show/hide component

Hapus komponen

Rotate komponen

Membuat program untuk simulasi

Mulai simulasi

Ekspor ke file Arduino agar dapat download ke board

Code **Start Simulation** **Export** **Share**

Components Basic

Search

Resistor

LED

Pushbutton

Potentiometer

Capacitor

Slideswitch

Toolbox
Semua komponen yang tersedia. Pencarian dapat menggunakan filter:

Components
Basic
All

Starters
Basic
Arduino
micro:bit
Circuit Assemblies
All

Workspace
Tempat menyimpan, drag n drop komponen

Components

Basic Components



Components [1/6]

Component types:

- Input
- Output
- Power
- Breadboards
- Microcontrollers
- Instruments
- Integrated Circuits
- Power Control
- Connectors
- Logic

Components [2/6]

General



Resistor



Capacitor



Polarized
Capacitor



Diode



Zener Diode



Inductor

Power



9V Battery



1.5V Battery



Coin Cell 3V
Battery



Potato Battery

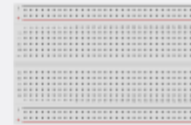


Lemon Battery

Breadboards



Breadboard



Breadboard Small



Breadboard Mini

Connectors



8 Pin Header



USB standard A

Instruments



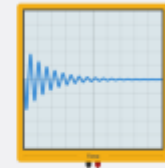
Multimeter



Power Supply

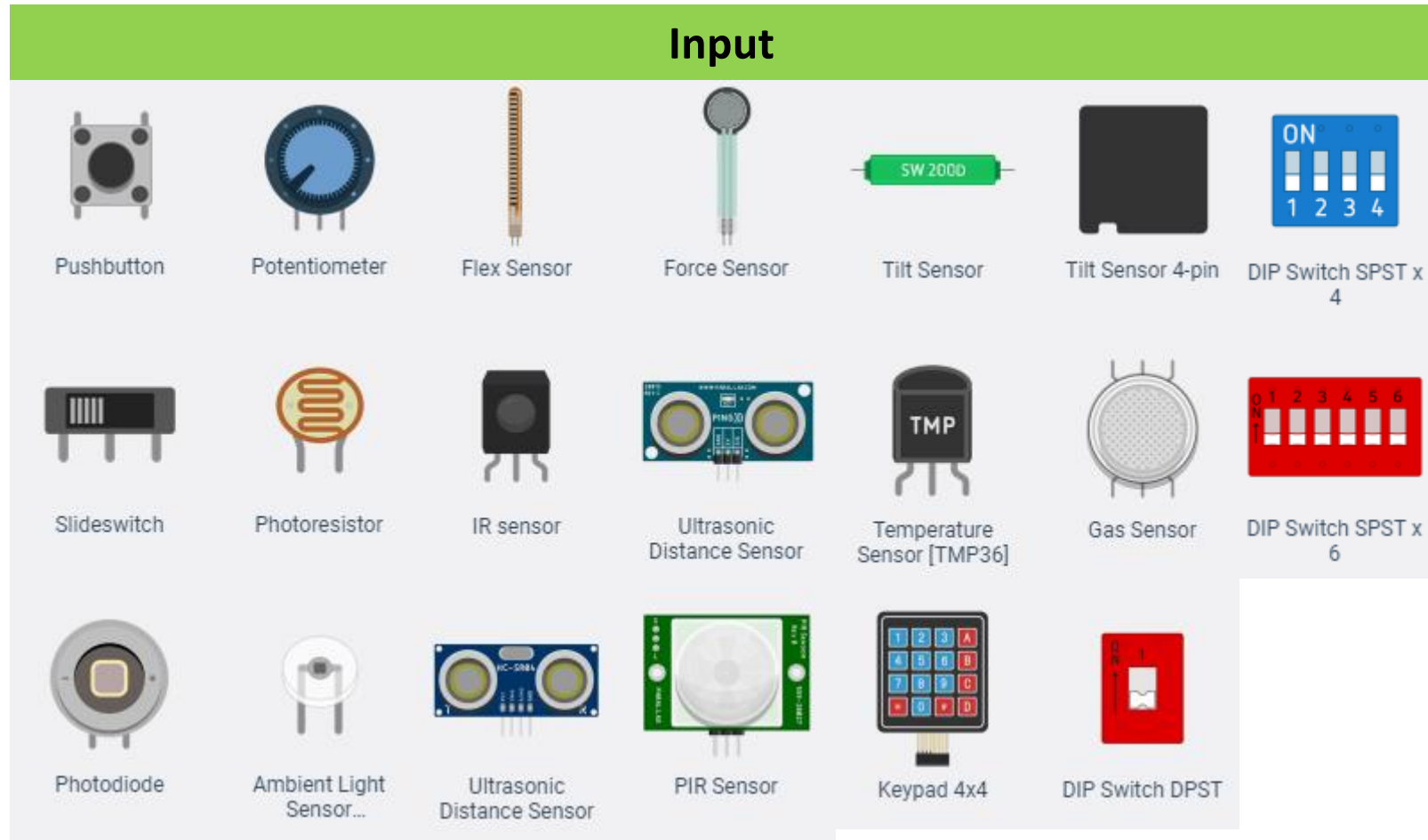


Function
Generator

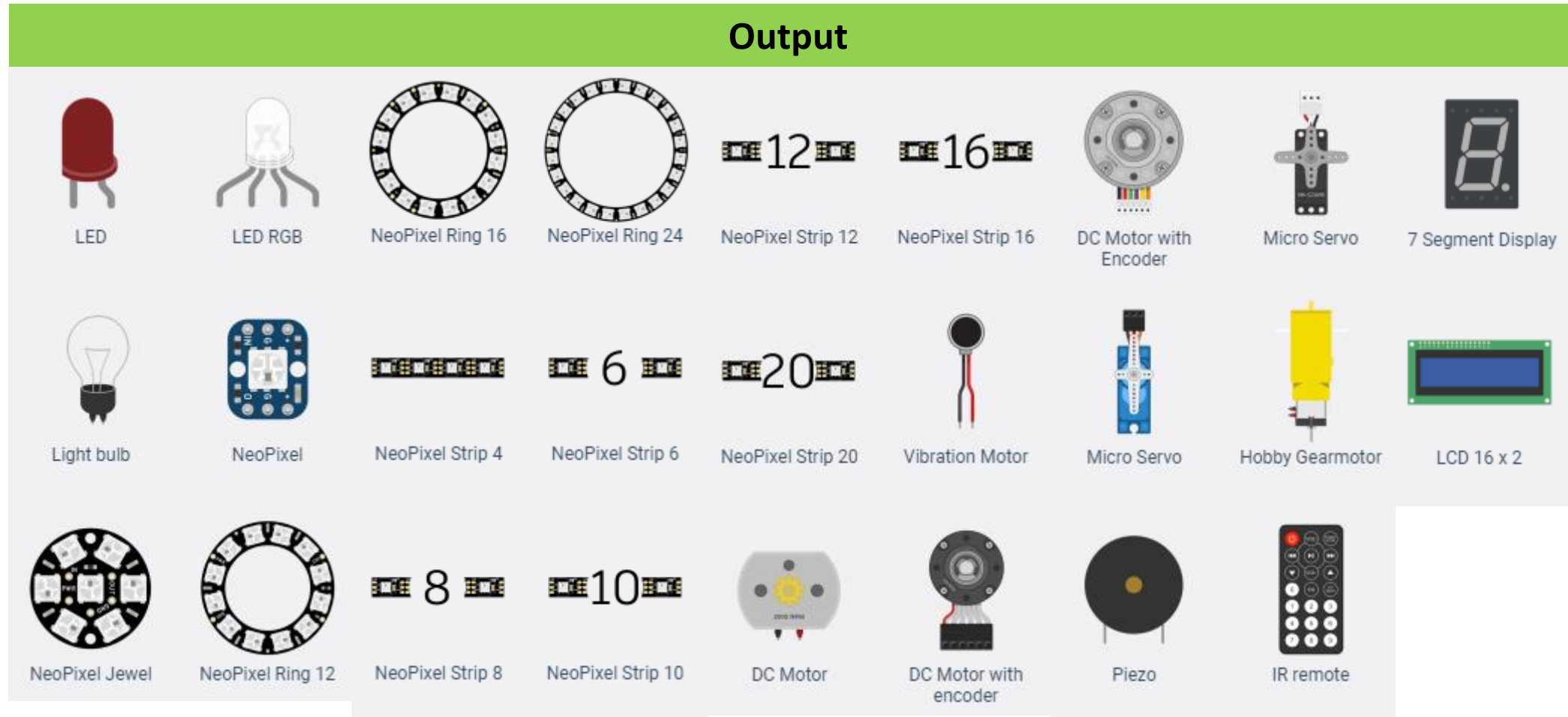


Oscilloscope

Components [3/6]

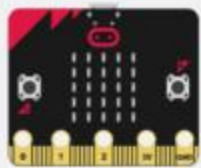


Components [4/6]



Components [5/6]

Microcontrollers



micro:bit



micro:bit with Breakout



Arduino Uno R3



ATTiny

Integrated Circuits



Timer



Dual Timer



741 Operational Amplifier



Quad comparator



Dual comparator



Optocoupler

Power Control



NPN Transistor (BJT)



PNP Transistor (BJT)



TIP120



Relay SPDT



H-bridge Motor Driver



Small Signal nMOS Transistor



Small Signal pMOS Transistor



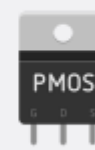
Relay DPDT



5V Regulator [LM7805]



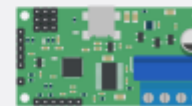
nMOS Transistor (MOSFET)



pMOS Transistor (MOSFET)



3.3V Regulator [LD1117V33]



Pololu Simple Motor Controller

Components [6/6]

Logic						
						
Quad NAND gate	Quad NOR gate	Inverting Schmitt Trigger	Quad NAND Schmitt Trigger	Dual 4-Input AND gate	Dual J-K Flip-Flop	8-Bit Shift Register
						
Quad AND gate	Quad OR gate	Triple 3-Input NAND gate	Triple 3-Input AND gate	Dual D Flip-Flop	4-Bit Latch	7-Segment Decoder
						
Quad XOR gate	Hex Inverter	Triple 3-Input NOR gate	Dual 4-Input NAND gate	4-Bit Binary Counter	4-Bit Adder	Johnson Decade Counter

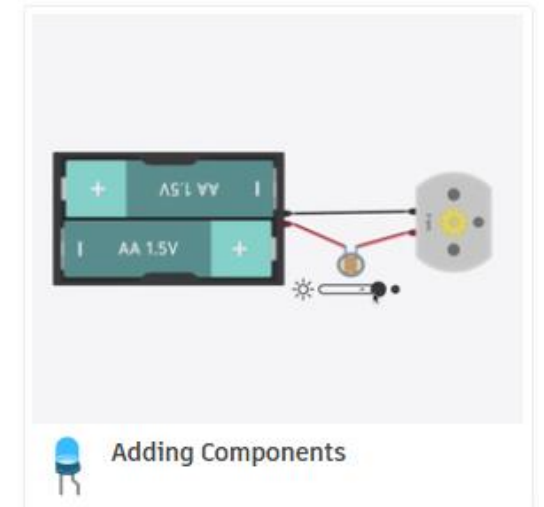
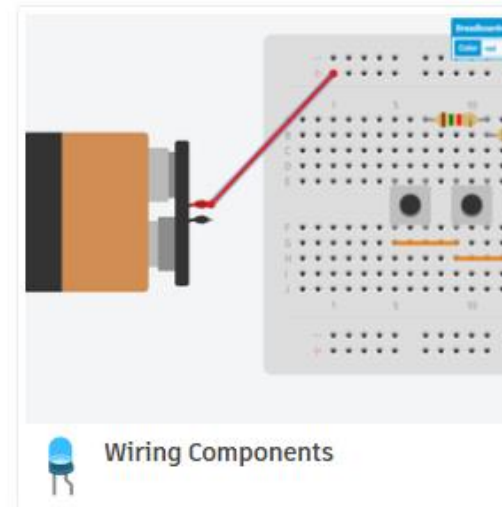
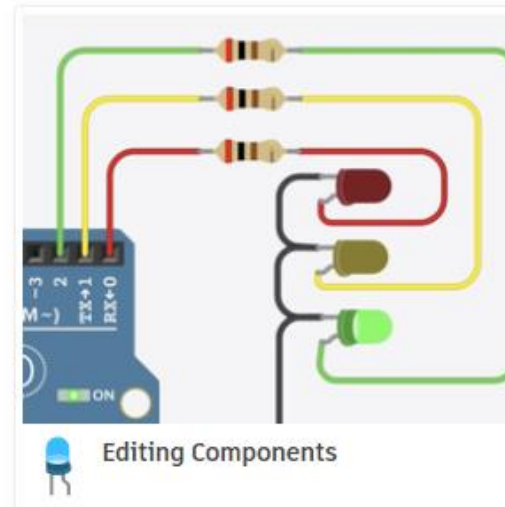
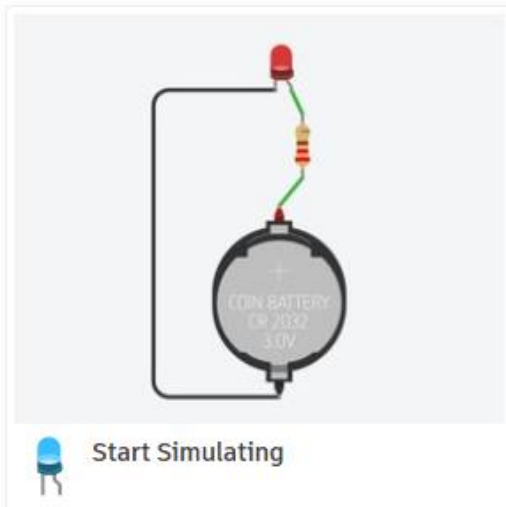
Tinkercad Circuits

Getting Started

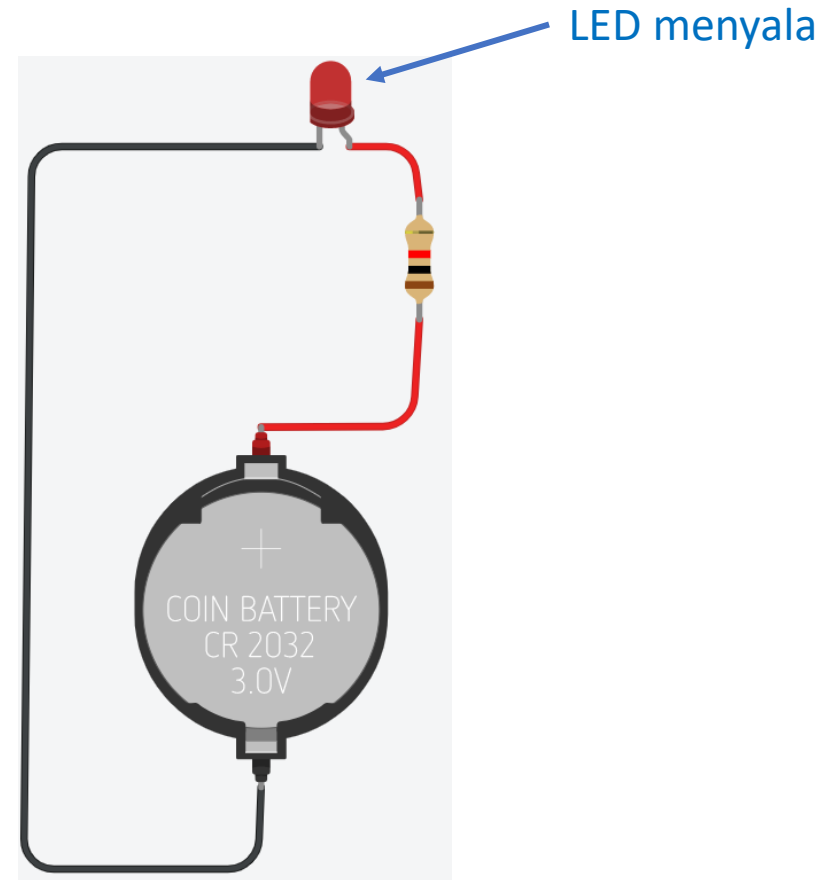
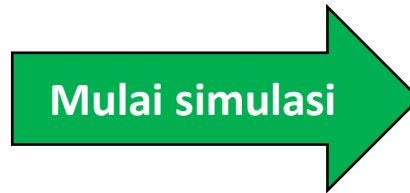
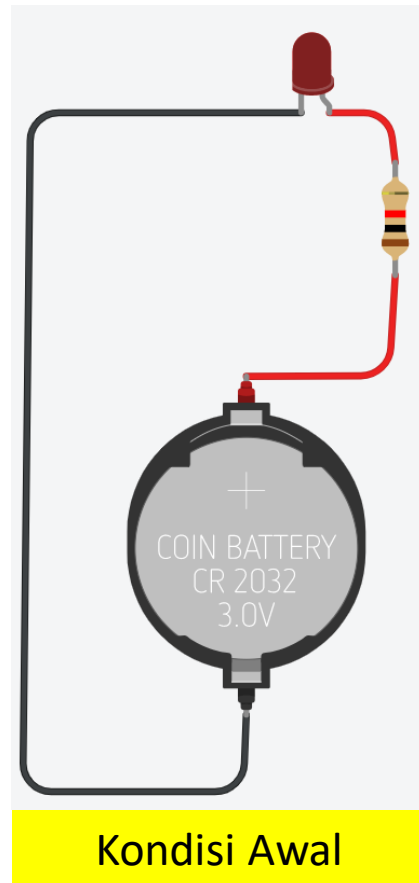
<https://www.tinkercad.com/learn/circuits/learning>

Getting Started

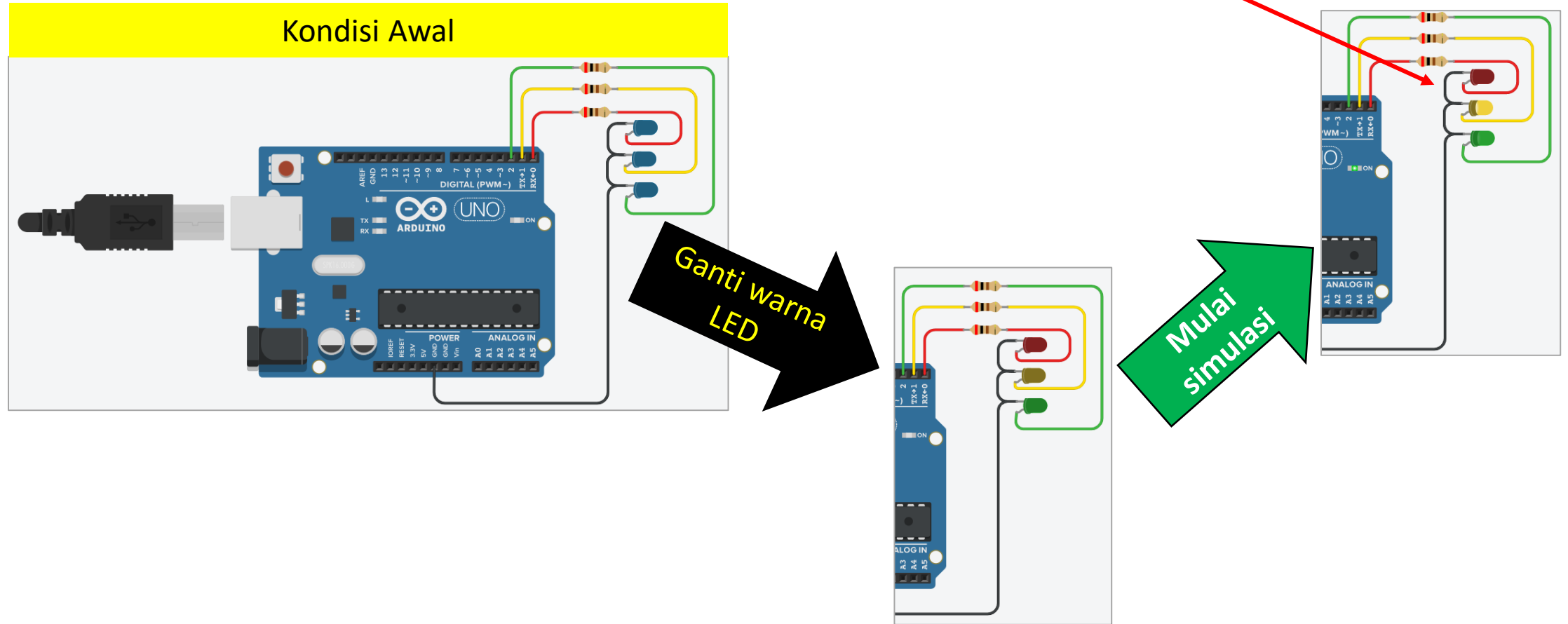
<https://www.tinkercad.com/learn/circuits/learning>



Start Simulating

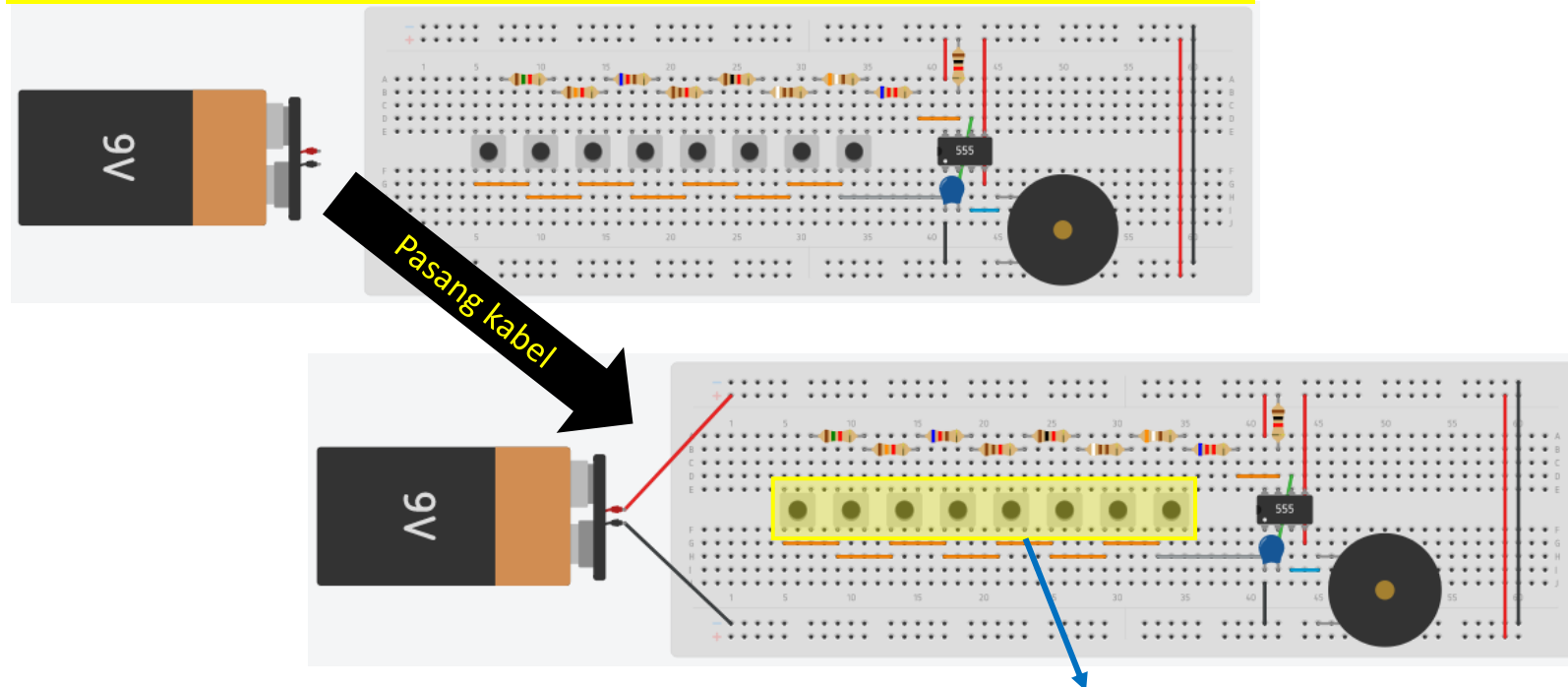


Editing Components



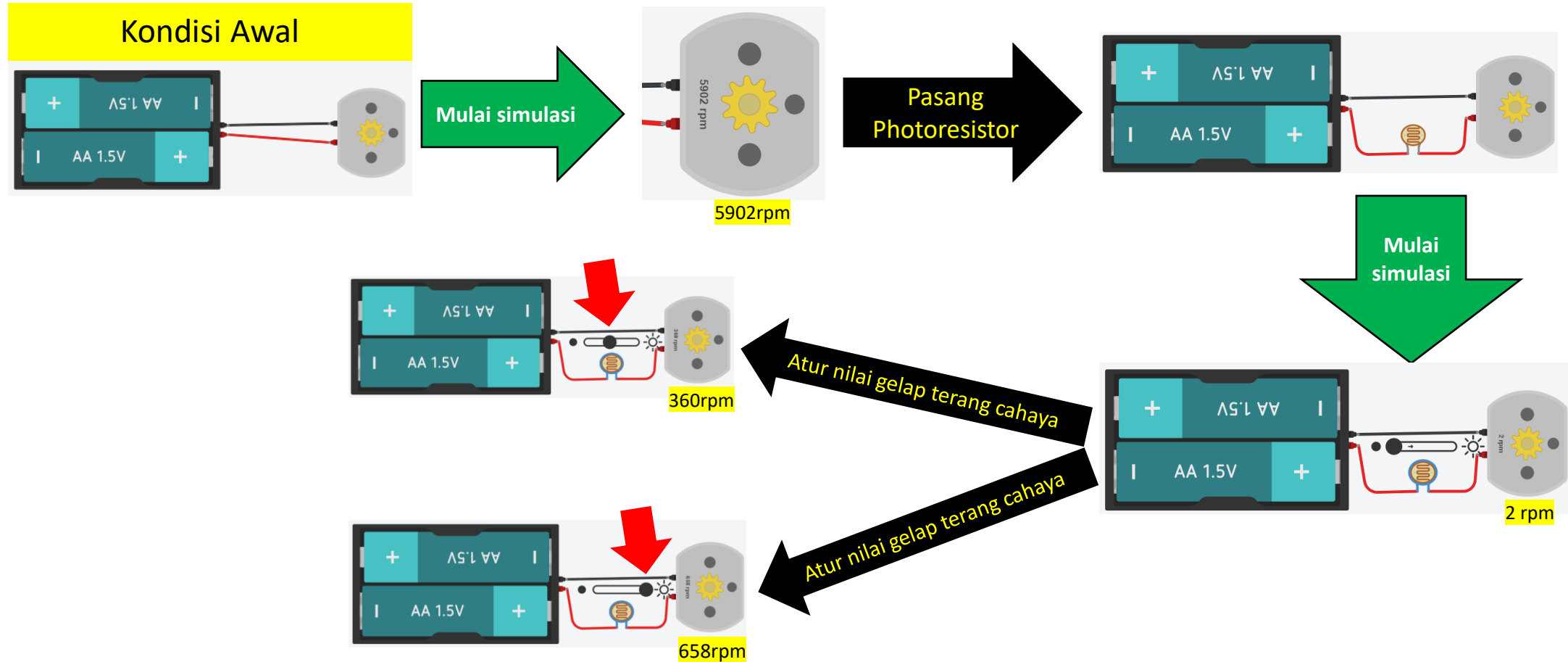
Wiring Components

Kondisi Awal



Mulai simulasi, tekan pushbutton secara bergantian, lalu dengarkan suara yang dihasilkan

Adding Components

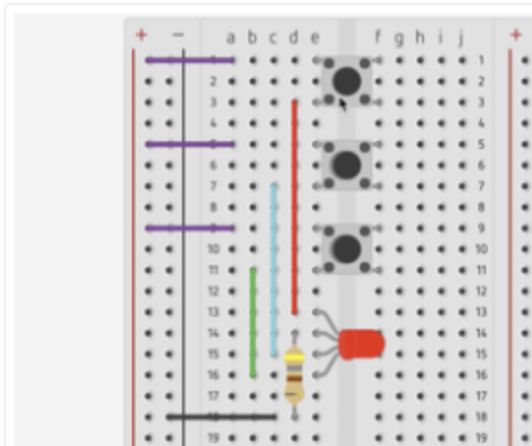


Skill Builders

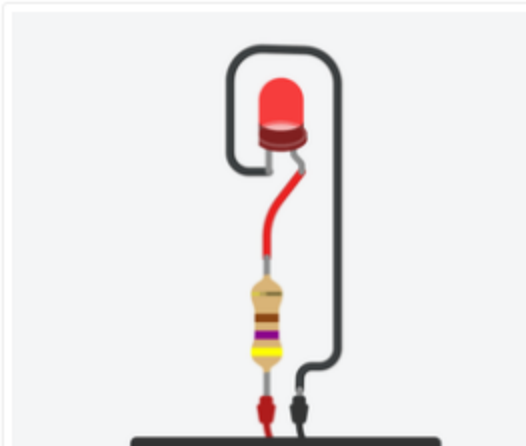
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Skill Builders

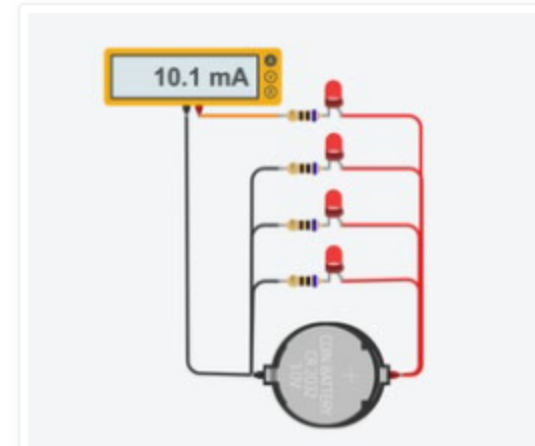
<https://www.tinkercad.com/learn/circuits/lessons>



Introducing the Breadboard

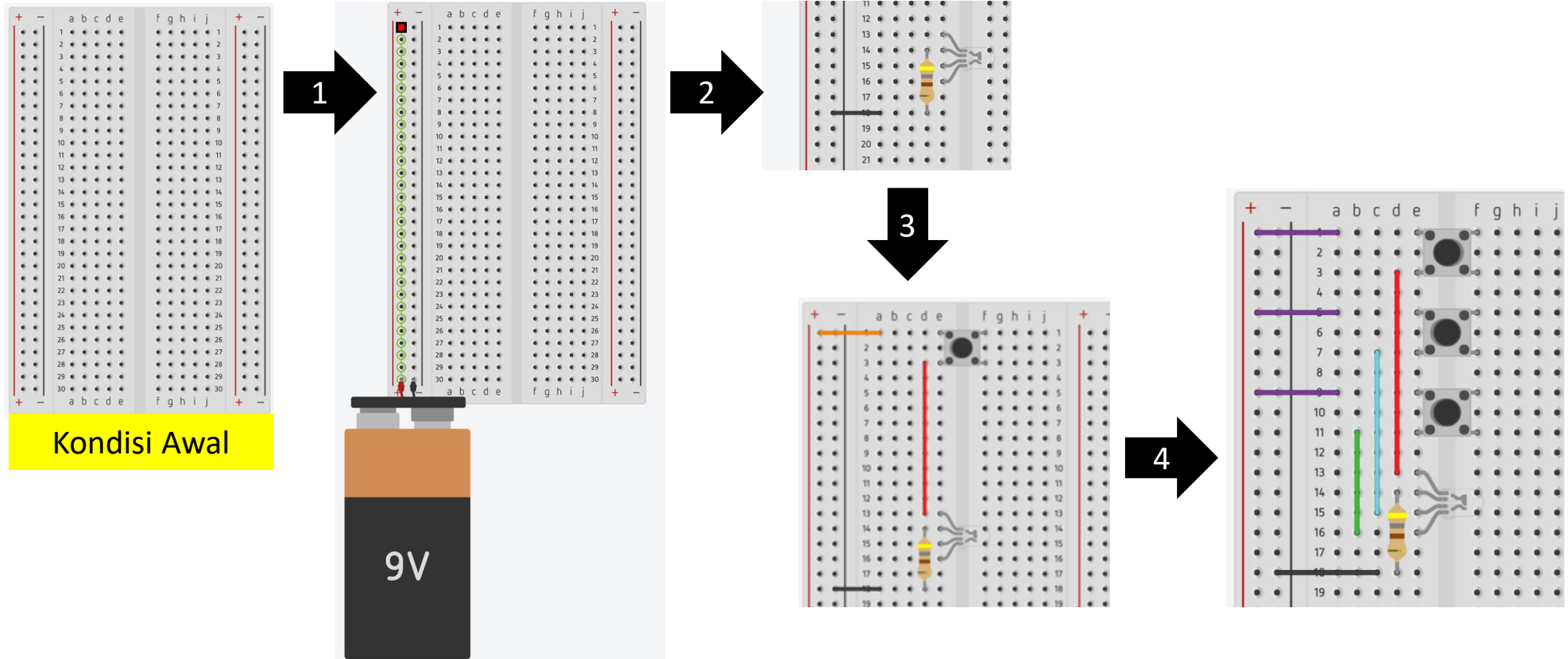


Ohm's Law

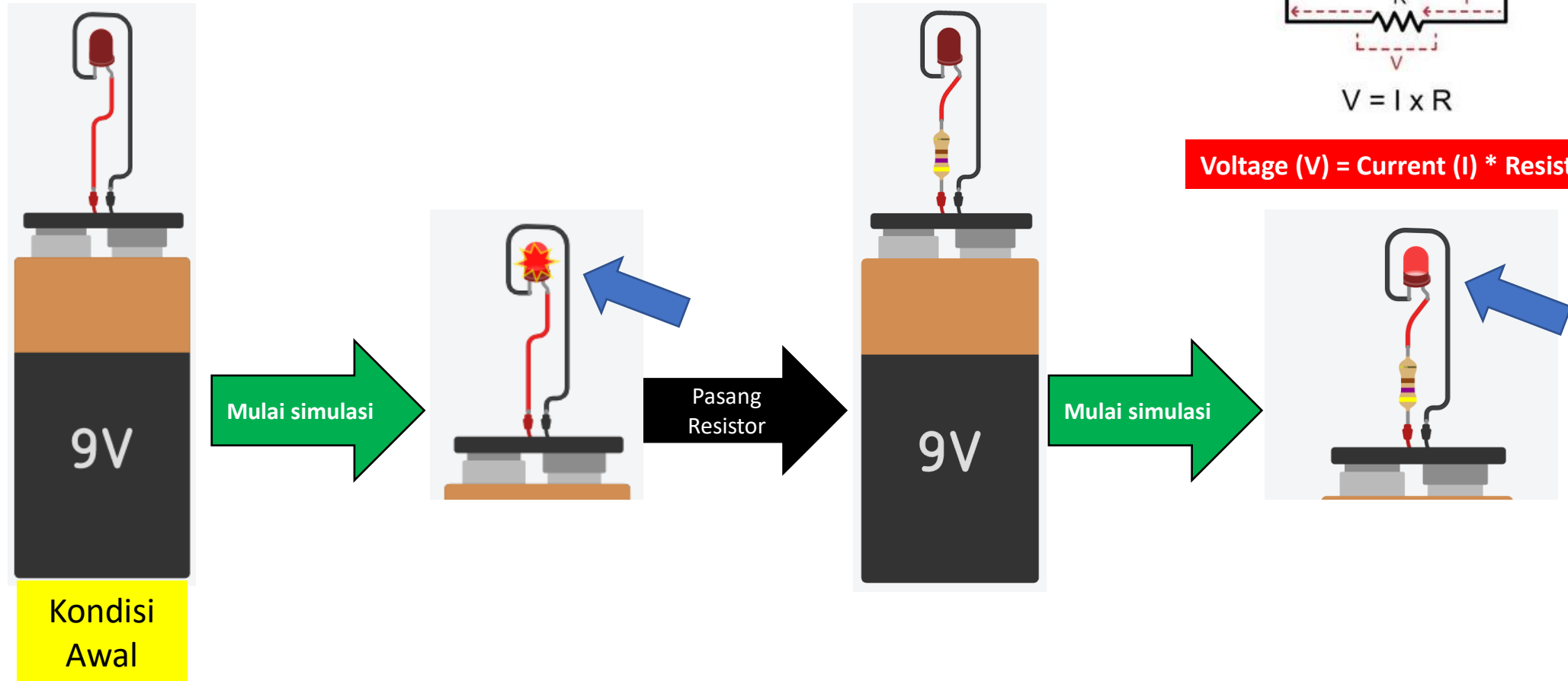


Series and Parallel Circuits

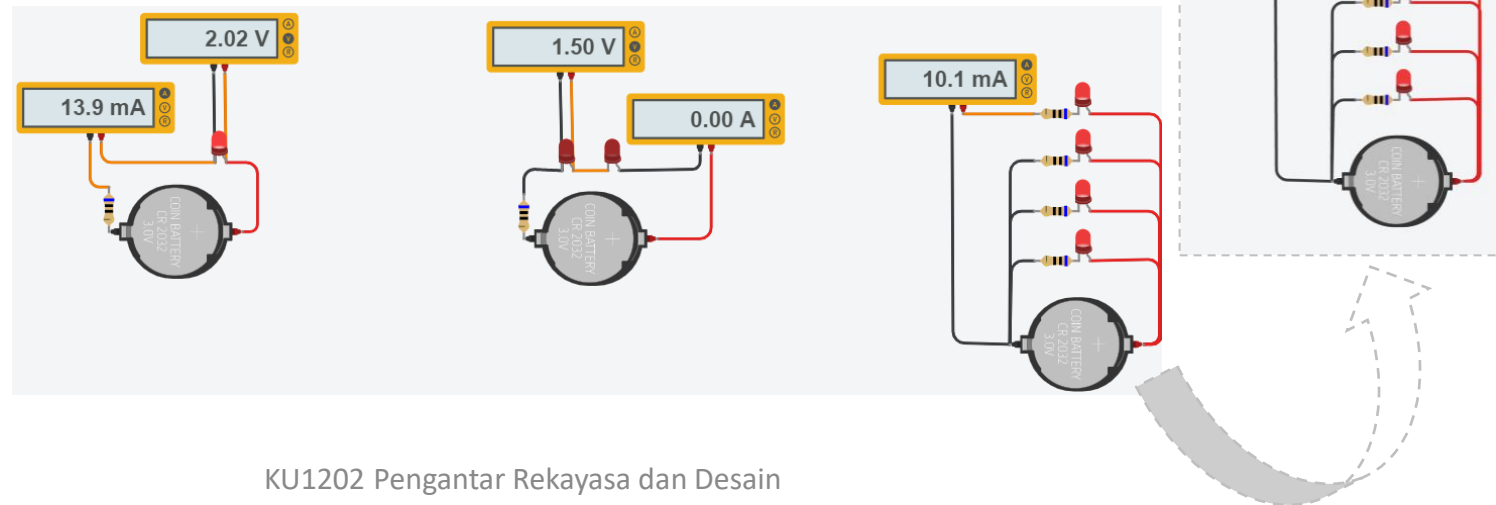
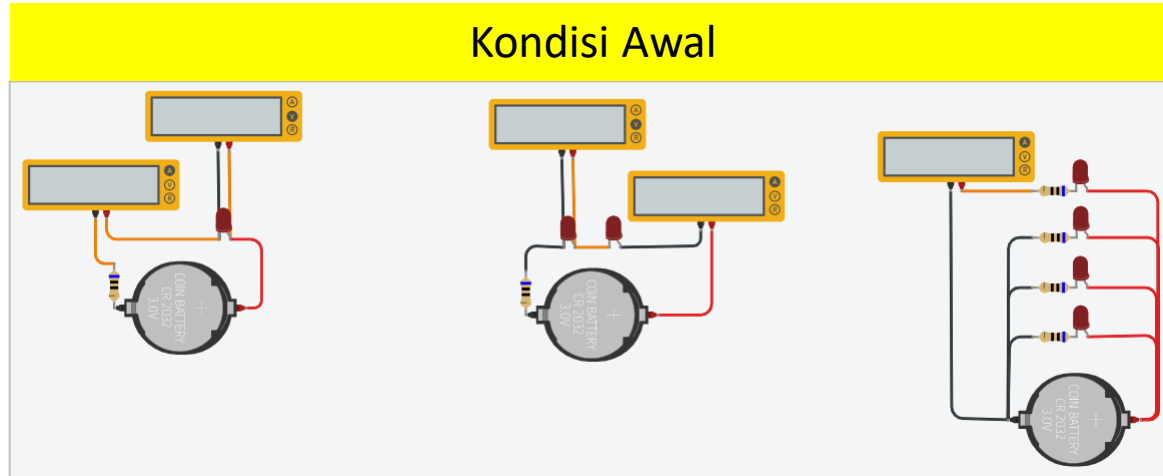
Introduction the Breadboard



Ohm's Law



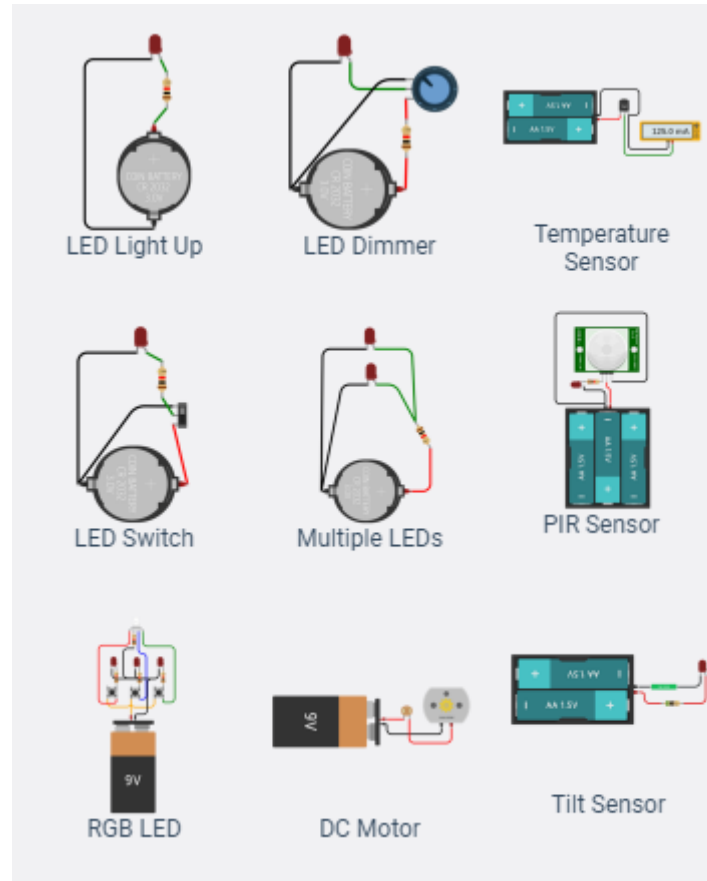
Series and Parallel Circuits



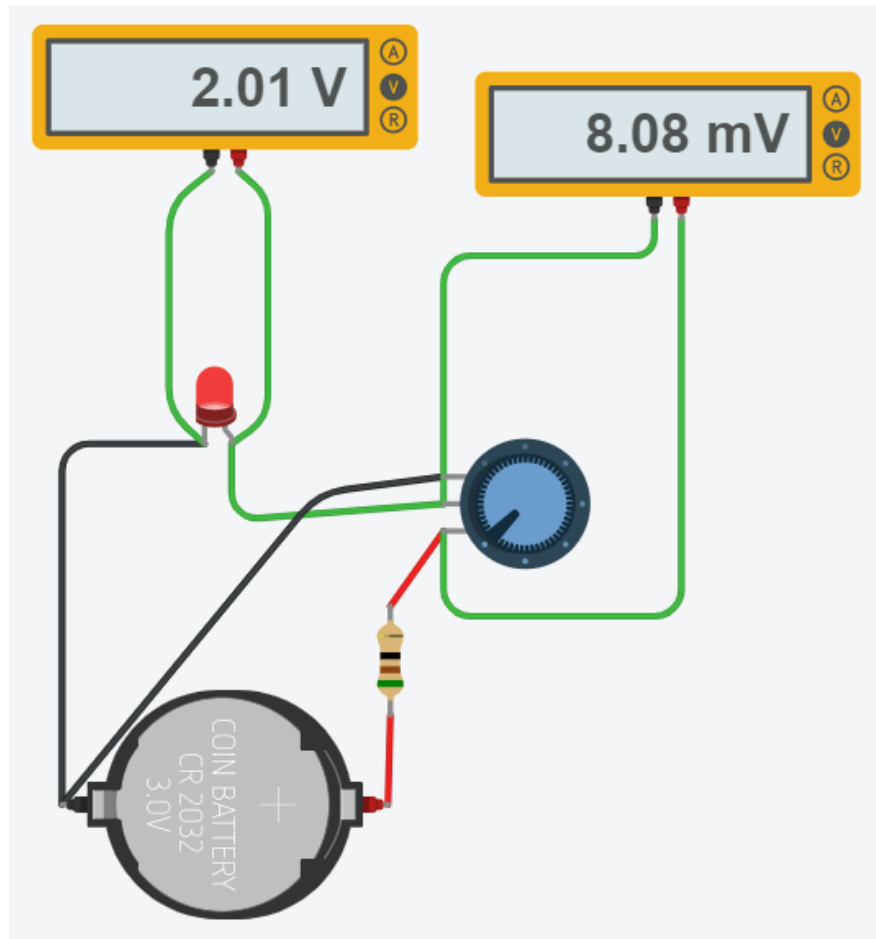
Basic Circuits

Example provided by Tinkercad

Basic Circuits on Tinkercad



Example: LED Dimmer



Name	Quantity	Component
D1	1	Red LED
BAT1	1	Coin Cell 3V Battery
Rpot1	1	500 Ω Potentiometer
R1	1	51 Ω Resistor
Meter1, Meter2	2	Voltage Multimeter

Penutup

Kesimpulan

- Membuat akun Tinkercad dan mengganti Screen Name.
- Mengenal tampilan dan bagian-bagian pada Tinkercad.
- Mempelajari fitur Tinkercad:
 - Memulai simulasi
 - Mengubah/menambah komponen
 - Memasang kabel
- Mempelajari dasar rangkaian:
 - Breadboard
 - Hukum Ohm
 - Rangkaian seri/paralel

Terima Kasih