

What is capacitive touch sensing, what are some examples of current products today, and what are the different levels of capacitance?

Capacitive touch sensing is a technology used to detect and measure the changes in capacitance which is the amount of charge of a certain amount of voltage kept within an electrical component, mostly to see touch or proximity sensed by the device. Capacitive sensors analyze the amount of capacitance of conductive materials which is mostly for human fingers.

Some examples of products that use capacitive touch sensing include:

- Smartphones, tablets, screens, TVs, cameras, refrigerators, car displays, display screens, interactive kiosks, touch pads, trackpads, buttons, microwave ovens, washing machines, digital audio players, and temperature controls

Higher pressure and strength with your finger or conductive material bring higher capacitance which is also greater electrical charge held and lower strength will bring lower capacitance values. Capacitance is also determined by the environment that surrounds the touch-sensing

What is the difference between conductors and insulators

A conductor is a material that can let the electric charge go through the material with less resistance. A material that is a conductor is copper which brings low resistance. An insulator is the opposite of a conductor in that there is no flow in an electric charge. A material example is glass which has high resistance. Insulators help protect and block conductors from electrical shocks

Resistance = resistivity * length / cross-sectional area

- This formula is a way to find the resistance of a material

Brief: This is an important part of Arduino because it helps understand the relationship between electrical devices and knowing the amount of voltage, current, and resistance

What is Ohm's Law? What are the units? Choose as many.

- a) $V=I \cdot R$
- b) Voltage=Current*Resistance
- c) Voltage= volt (V)
- d) Current= amp (A)
- e) Current= Ion (I)
- f) Resistance= ohm (Ω)

Brief: This is an important part of Arduino because it helps to avoid an undefined state at an input

Why is it necessary to have a pull-down resistor? Choose as many.

- a) To make sure the input is not floating
- b) To make the button work
- c) To make power
- d) To stop the circuit

Brief: This is an important part of Arduino because it is knowing how to code the pin of the result that can be provided.

What are the correct values that digitalWrite can produce? Choose as many.

- a) ON and OFF
- b) HIGH and LOW
- c) YES and NO
- d) 1 and 0

Brief: This is an important part of Arduino because you will create a device in the correct way of guiding the energy flow in one direction and avoiding problems

What are Diodes? Choose as many.

- a) A semiconductor device that allows current to only flow in one direction
- b) Anode + \rightarrow Cathode -
- c) Cathode - \rightarrow Anode +
- d) A semiconductor device that allows current flow in two directions

Brief: This is an important part because you will know the functionality of the device and its limitations. Also, the servo in the code can not be a negative number and it could also harm the motor

What's the hobby servo's total possible range of motion? Choose as many

- a) 360°
- b) $0-180^\circ$
- c) $0-90^\circ$
- d) $0-270^\circ$

