Data Collection

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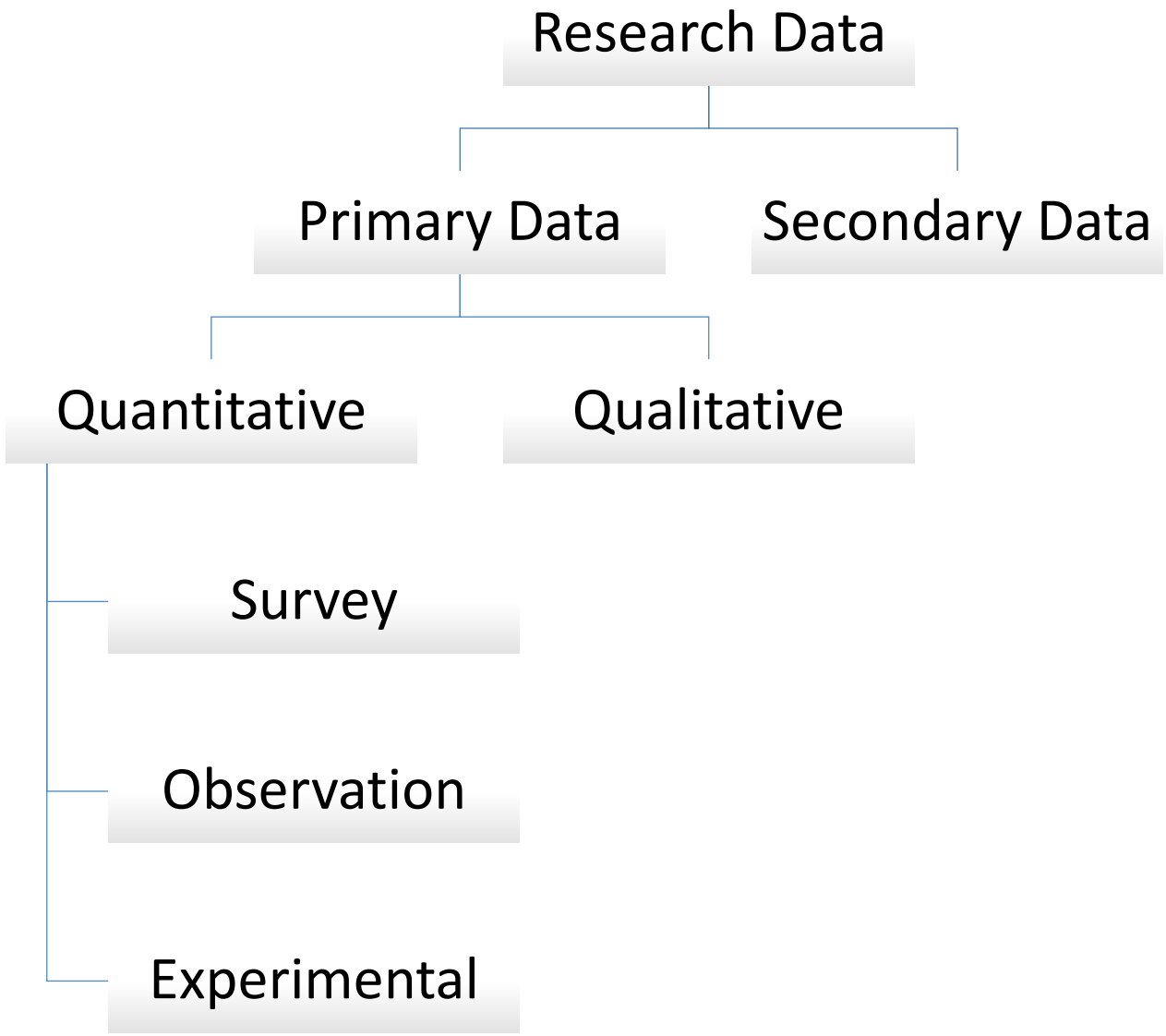
Data

Data is a collection of **discrete or continuous values** that convey **information,** describing the **quantity**, **quality**, **fact, statistics**, other basic units of meaning, or simply sequences of symbols that may be further interpreted formally.

Factual information (such as **measurements** or **statistics**) used as a basis for **reasoning**, **discussion**, and **calculation**.

Types of Data

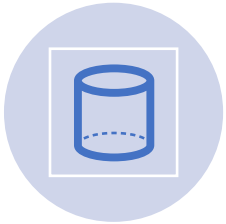


Types of Data

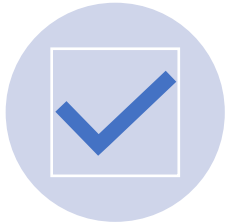
Quantitative or **numerical data** are the values of numerical characteristics associated with items in a sample.

These are typically either counts of the number of occurrences of a phenomenon of interest or measurements of some physical property of the items.

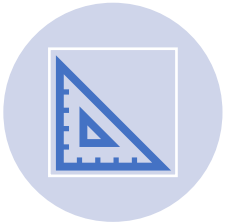
Data collection



What are you measuring? Why?



Which data to collect?



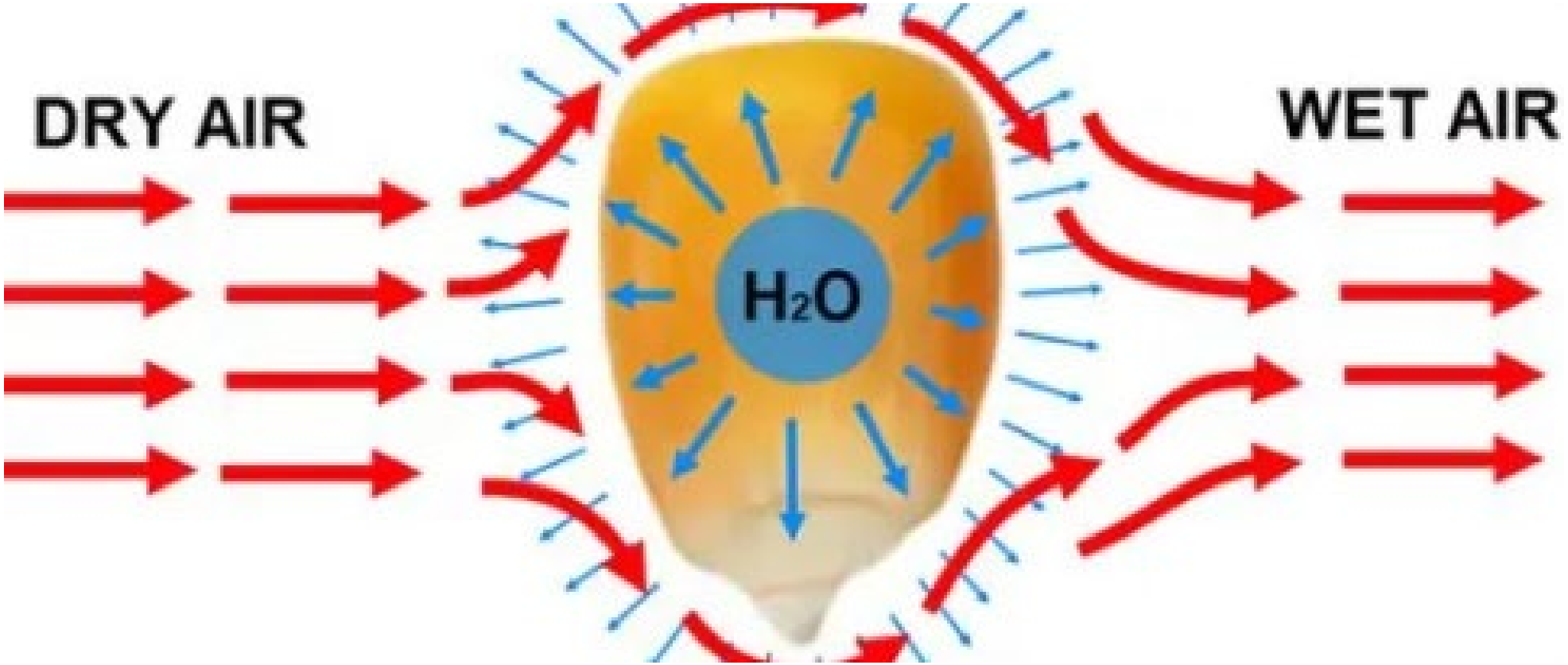
How to collect?

Who to collect?

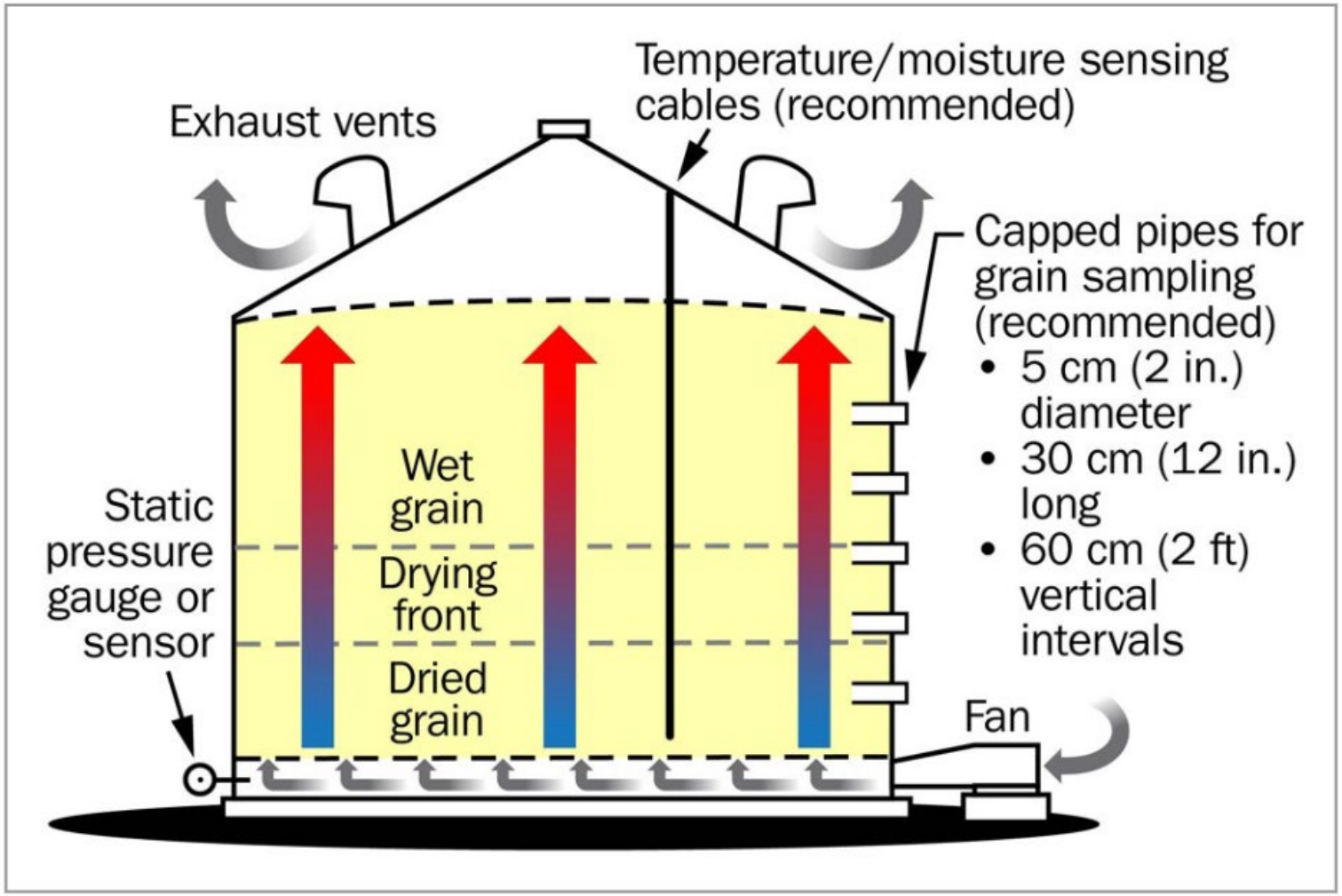
How much to collect?

When to collect?

Data collection – measurement example



Data collection – measurement example



Data collection

Measurement

Data collection – measurement

- Make **operational definitions**. What and why?
- Choose right equipment.
- «A **measurement** or **measuring method** is called **valid** if it **usefully or appropriately represents** the **feature** of an object or system that is of engineering importance.»

Data collection

Measurement

Sampling

Data collection – sampling

“How much data do I need?”

“It depends.”

“How many repetitions do I need?”

“It depends.”

“On what?”

Data collection

Measurement

Sampling

Recording

Data collection – recording

- The format of data recording significantly affects its usability.
- Search for common tools

Reference

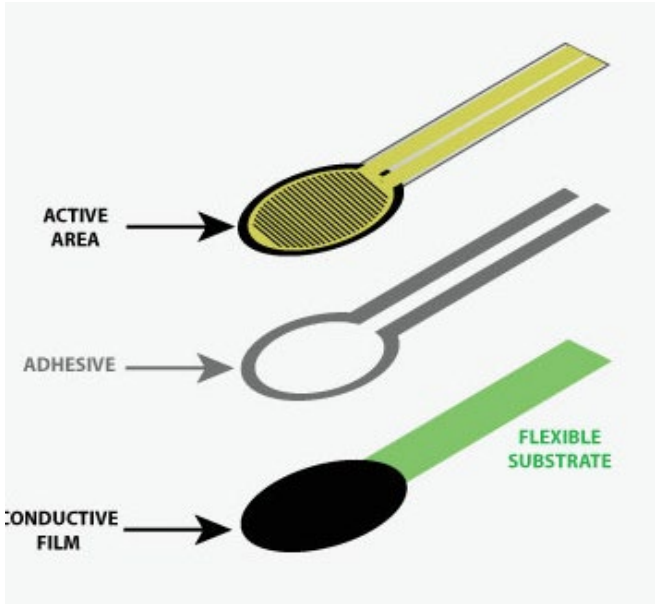
- Vardeman, S., & Jobe, J. M. (2001). Basic engineering data collection and analysis.

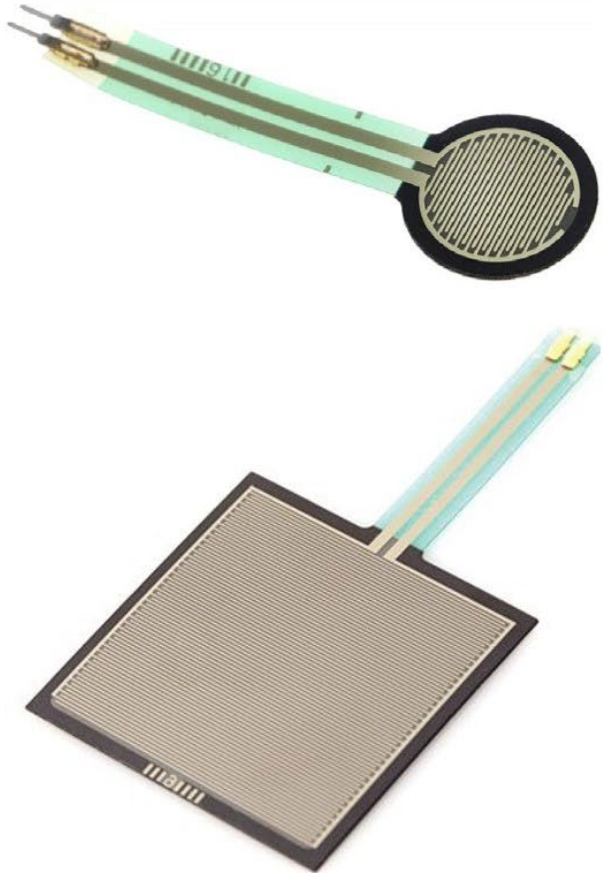
Tips

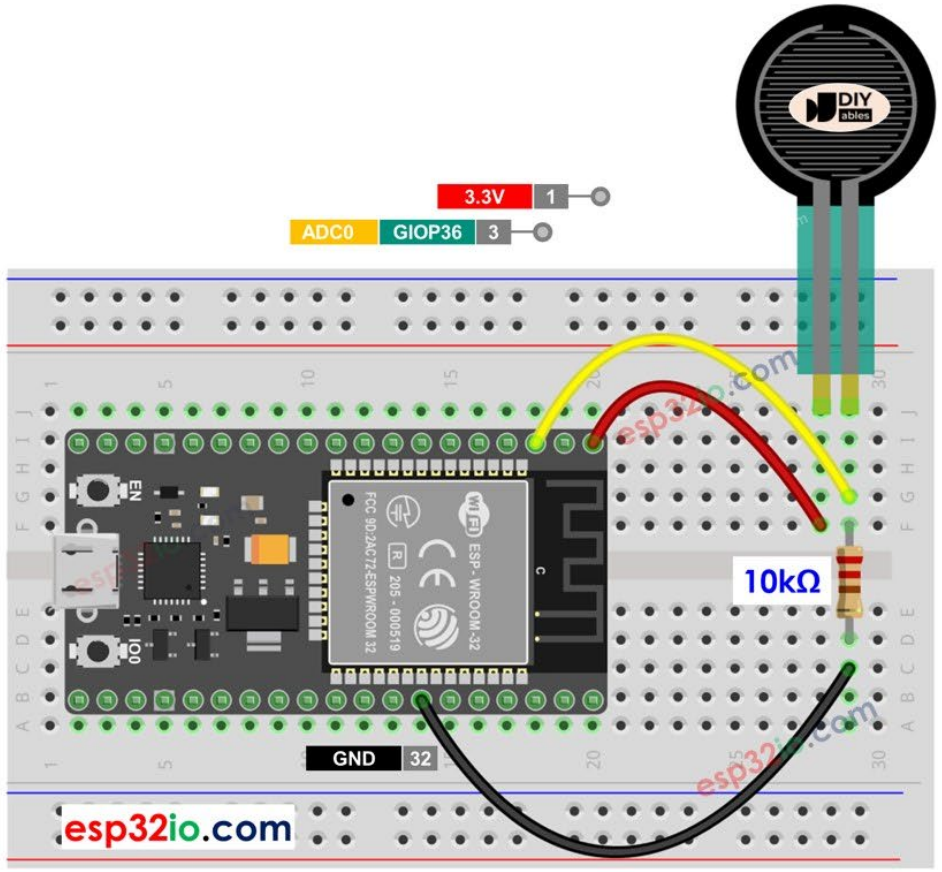
- Take pictures
- Take notes
- Label your data
- Label your samples

Demo time!

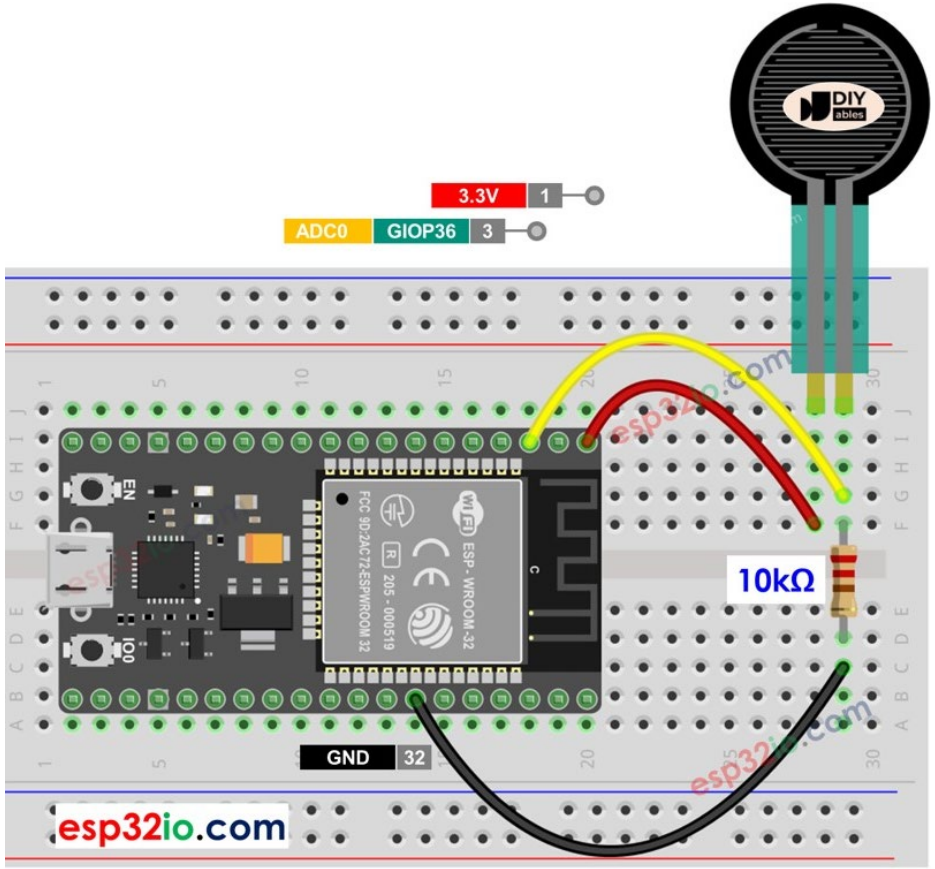
- Data collection for sensor input using ESP32.

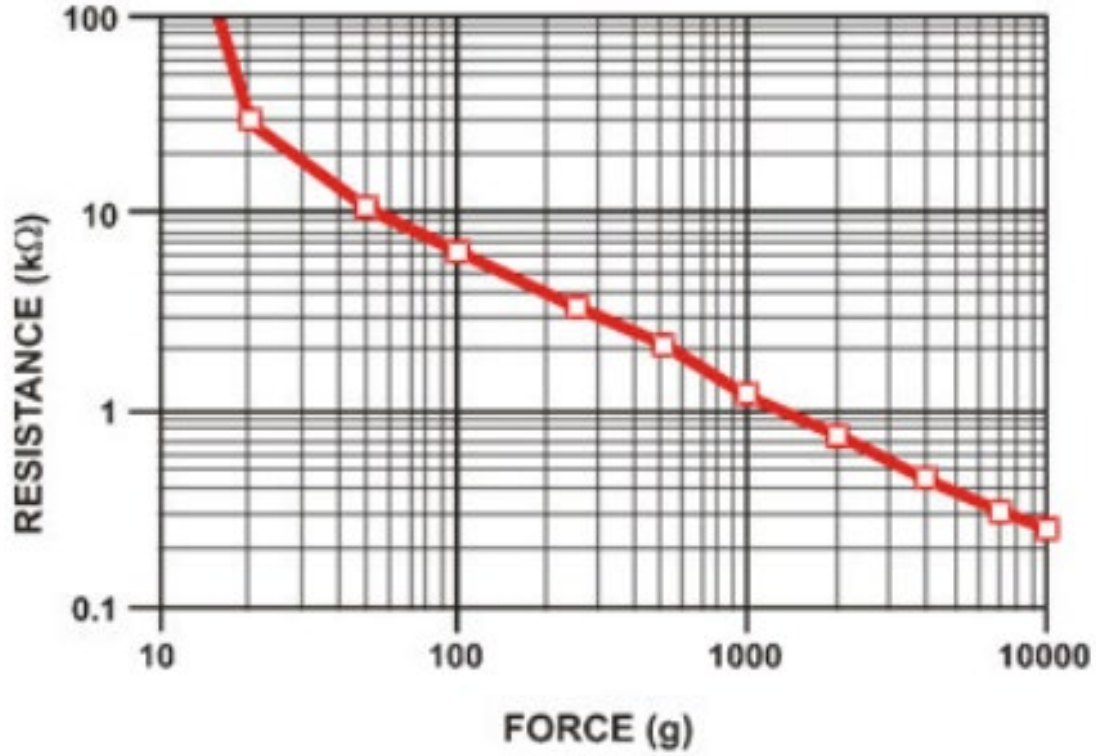






Demo time!


DIY ables
3.3V 1
ADC0 GIOP36 3
10kΩ
GND 32
esp32io.com


RESISTANCE (kΩ)
100
10
1
0.1
10
100
1000
10000
FORCE (g)