**Measuring energy consumption**

* Measuring energy consumption can be a complex task that depends on the specific application and the type of energy source you want to measure. Below, I'll provide a simple Python script that can be used to estimate the energy consumption of a device running on a fixed power consumption over a period of time.
* Keep in mind that this is a basic example and may not accurately represent the energy consumption of all devices.
* You can run this script and input the power consumption of your device in Watts and the time it's powered on in hours. The script will calculate the energy consumption in Watt-hour.
* If you want to measure energy consumption in a more accurate and real-world scenario, you may need additional hardware or sensors to monitor the energy usage, such as a wattmeter or a smart energy monitor.
* The code for such hardware would depend on the specific device and sensor you are using, and it typically comes with its own libraries and documentation
* Keep in mind that energy consumption can vary over time for many devices, and this simple script assumes a constant power consumption, which may not be accurate for all situations.
* To get more accurate measurements, you might need to use specialized equipment and techniques.

**Program :**

**def calculate\_energy\_consumption(power\_watt, time\_hours):**

**# Energy (in Watt-hours) = Power (in Watts) x Time (in Hours)**

**energy\_wh = power\_watt \* time\_hours**

**return energy\_wh**

**# Input power consumption in Watts and time in hours**

**power\_watt = float(input("Enter the power consumption in Watts: "))**

**time\_hours = float(input("Enter the time in hours: "))**

**energy\_consumption = calculate\_energy\_consumption(power\_watt, time\_hours)**

**print(f"Energy consumption: {energy\_consumption} Watt-hours")**

**Program explain :**

This Python program calculates the energy consumption in Watt-hours (Wh) based on the power consumption in Watts (W) and the time in hours (h) provided by the user. Here's an explanation of how the program works:

1. The program defines a function called calculate\_energy\_consumption that takes two parameters: power\_watt and time\_hours. This function calculates the energy consumption in Watt-hours using the formula: Energy (in Wh) = Power (in W) x Time (in h).

2. It then calculates the energy consumption by multiplying the power\_watt and time\_hours and stores the result in the variable energy\_wh.

3. The function returns the value of energy\_wh.

4. The program proceeds to the main part of the code:

a. It prompts the user to input the power consumption in Watts using the input function and converts the user input to a floating-point number using float(). The input value is stored in the variable power\_watt.

b. It also prompts the user to input the time in hours, which is again converted to a floating-point number and stored in the variable time\_hours.

c. The calculate\_energy\_consumption function is called with the provided power\_watt and time\_hours values as arguments, and the result is stored in the variable energy\_consumption.

d. Finally, the program prints the calculated energy consumption in Watt-hours using an f-string and displays it to the user.

So, when you run this program, it will take the power consumption in Watts and the time in hours as input, multiply them to calculate the energy consumption in Watt-hours, and then display the result to the user.