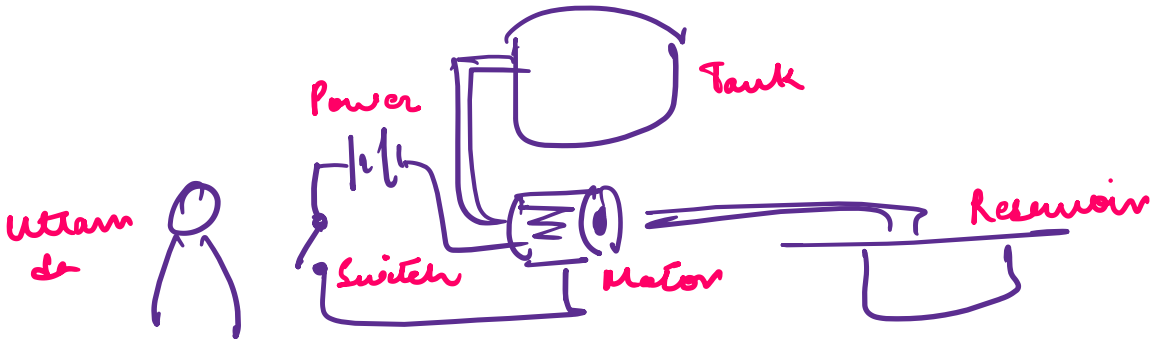
What is IoT?

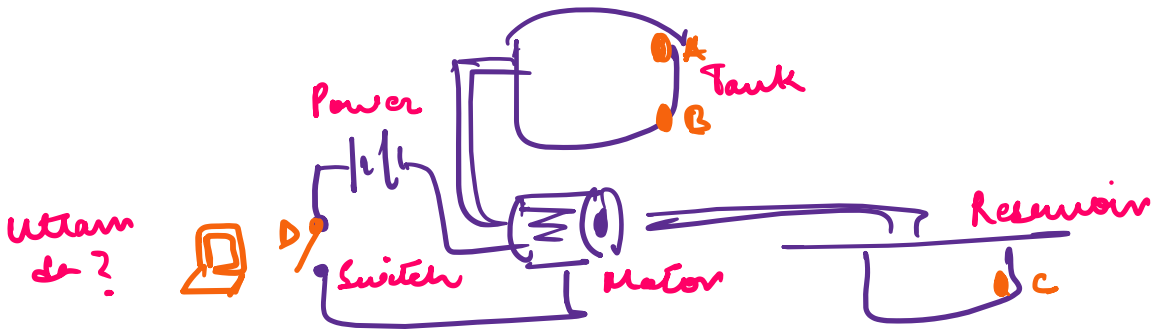
1. IoT stands for Internet of Things. Here Internet doesn't only refer to the Internet we use for all sorts of things, but communication in general.
2. In IoT, things communicate with each other to become smart things which make our life easier. And we tell it what and how to communicate. It will become easier to understand after an example.

Difficult life of Uttam da?



1. He sees that water is not coming from the tap and understands that the tank is empty.
2. He turns on the motor and the motor starts pumping water from the reservoir to the pump.
3. He doesn't usually check the reservoir, but if the reservoir is empty and the motor keeps on running, the motor will burn out or something. The reservoir generally contains water but it should be checked, just in case.
4. Then he turns on the motor and waits till the tank is filled (not really, he just does something else).
5. When he sees or hears that water is overflowing from tank, he turns the motor off. Alternatively, he also remembers, from his past experiences, how much time it approximately takes to fill the tank, and can turn off the motor before the water starts overflowing using his super power.

How to make Uttam da's life easier (how to replace Uttam da with machine)?



1. Two sensors A and B are installed at the top and bottom of the tank to check if the tank is full or empty. Note that more sensors can be used to check how much of the tank is full.
2. A sensor C is installed at the bottom of the reservoir to check if the reservoir is empty.
3. A relay (a switch that can be controlled with our program) is installed in place of the switch.

4. And finally, a computer replaces the core role of Uttam da. We can check the status of tank and reservoir by using the sensors, and change the status of the motor by using the relay.
5. This system is still inferior to Uttam da because it can't remember how much time it takes for the tank to fill, but that can be implemented in our code, by finding the average of some previously recorded filling times.
6. And then we have a smart pump control system to make Uttam da's life easier. Plus, it can do a lot of more things like remote control using internet and what not!

What is IoT again?

1. IoT is the field of study where we build these smart systems which can ease our lives so we can focus on more important things in life.
2. I doubt it's the proper definition of IoT, but I think it is more or less like that (unless I've been doing something completely different for a year).

What are the devices we use in IoT?

1. We use a lot of devices in IoT to do things humans can do (also things that humans can't do).
2. These can be categorized roughly into the following categories:
    a. Sensors
       They are like our sense organs but they come in way more varieties than human senses, like water level sensor, ultrasound sensor, infrared light sensor, ultraviolet light sensor, atmospheric pressure sensor, temperature sensor.....
    b. Actuators
       They are like our hands and legs; they move or change in some way to achieve our desirable outcome. It can be a motor, speaker, door lock, relay.....
    c. Displays
       Maybe they also fall under the same category as actuators, but let's just make another category because there are a lot of display devices. There is the most basic LCD, but there are also OLED screens, dot matrices and much more.
3. The knowledge of all these different types of devices allows us to imagine what type of smart systems can be created by using them.

How to get started with IoT?

1. We will initially use Arduino UNO (it is the processor, not a very good one, but it is simpler than the other options we have) and Arduino IDE (it is the IDE we will be using; it is simple and we can write code in a C-like language to interact with the processor).
2. To get started download Arduino IDE from the Internet (from arduino.cc) and install it.
3. It will download some stuffs to interact with Arduino boards, let it download; it may also ask for some permissions, it is safe if the IDE is downloaded from legit source.
4. Then you are good to attend the next sessions.

What to do at home?

1. Consider the example of the smart pump system. To make it simple, imagine there are four variables A, B, C and D for each of the devices in the second figure. If 0 means off and 1 means on, how would you decide the value of relay?