Battery (it has +ve postive and –ve negative terminals)

Contains Chemical that can generate Positive and Negative charged atoms. Often in a packaging with Negative and Positive terminal exposed.

AC / DC converter (it has +ve postive and –ve negative terminals)

A device that is connected to AC Power Source (from the wall socket), which later convert the AC into DC.

Capacitor (it has +ve postive and –ve negative terminals)

Capacitor cannot generate its own electricty. Capacitor collects and store electricity stored in Positive and Negative terminal. Once Positive and Negative terminal from the Capacitor is connected to a circuit, the electrons will flow into the circuit. Behaves almost like a battery, except that it discharge very fast and needs to be constantly charged. It is normally used together with Battery power or AC/DC source to ensure smooth current flow.

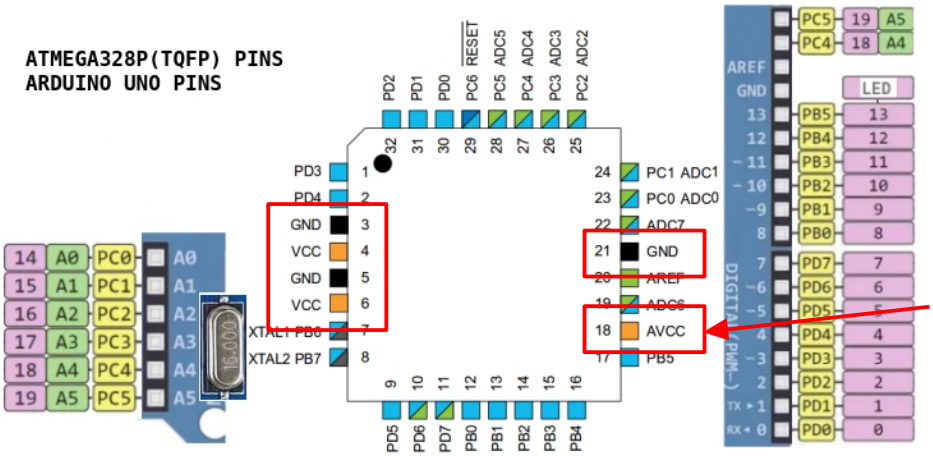
Solar Cells (it has +ve postive and –ve negative terminals)

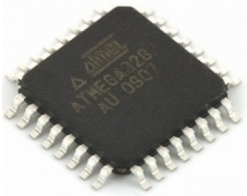
Contains Chemical that can generate Positive and Negative charged atoms when exposed to the Sunlight

DC Motor (it has +ve postive and –ve negative terminals)

When a DC motor is applied with electricity, it will turn. However when we manually turn the motor, it will generate Electricity instead. If we connect this motor to wind or water/gas turbine, eletricity can be generated from it.

Power Supply for Arduino Uno and Atmega328 micro-controller





Note: AVCC is required to be connected to 5V, because the Analog Pins uses seperate power supply.

In order for the Atmega328 micro-controller to work, it needs to receive electricity.
DC Power +ve Terminal to be connected to VCC
DC Power -ve Termnial to be connected to GND

Note: AVCC is also connected to +ve DC Terminal, this is for internal Analog Device power supply (reduce electrical noise for analog device)

We must make sure power does not exceed the limit, otherwise the chip will be burnt. We must also make sure the power is sufficient, otherwise the micro-controller will not function.

However, when using the Arduino Uno, it is easier. The Arduino Uno board DC Power Jack and Vin Pin are connected to a power regulator that will reduce the extra voltage to a stable 5V for the Micro-controller. It also have capacitors to ensure taht the current going into the micro-controller are stable.

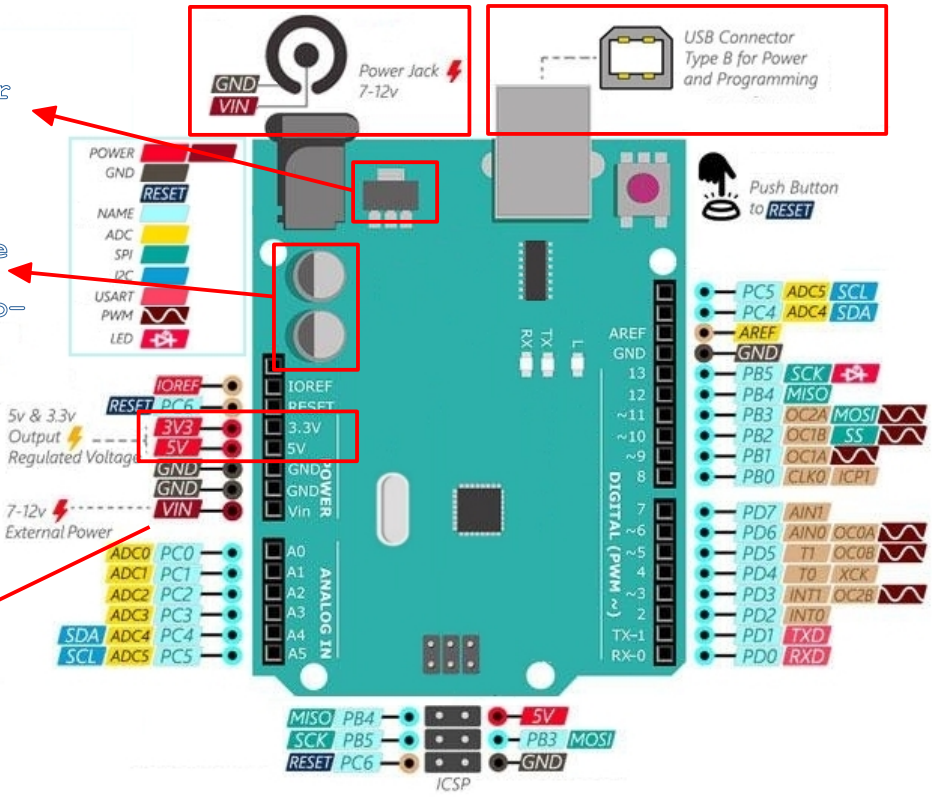
Source Power Supply
*DC Power Jack

USB Source Power Supply and
USB Serial Data Transfer

Power Regulator
Reduced input power
to 5v

Capacitor to ensure
smooth DC power
supply to the micro-
controller

Same as
*DC Power
Jack



NOTE: The Pins labelled 5V and 3.3v are normally used as OUTPUT power supply where connected device draw 5V or 3.3v DC power supply from them.