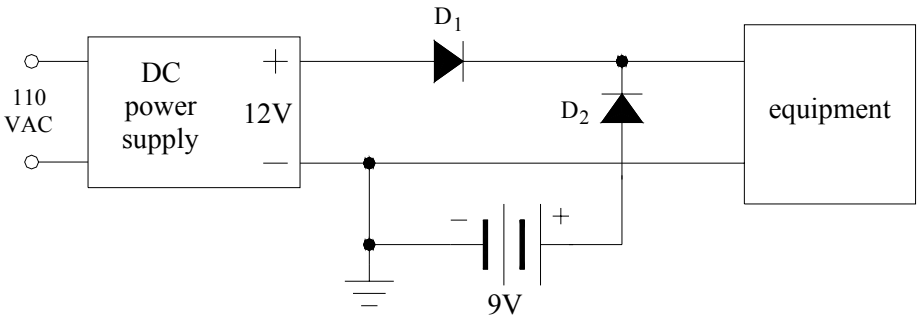
STEERING DIODES

Electronic equipment that can operate on either AC power or battery power (like a laptop) or that have a backup battery in case of power failure (like an alarm clock), need to have a way of switching from one power source to the other.

This can be done very simply with steering diodes



The key here is that the 9V battery voltage is less than the 12V DC power supply voltage.

While the DC power supply is on, D_1 has +12 volts on its anode, and is forward biased, powering the equipment. Since there is about 0.7 volts across the diode, there is about +11.3 volts on the cathode of D_2, so it's reversed biased and doesn't conduct, isolating the battery.

However, if the DC power supply fails or is turned off, then diode D_1 will become reversed biased, and diode D_2 will conduct current from the battery to power the equipment.