Circuits and Electronics

- R = U / I, P = UI.
- A battery has some internal resistance.
- Capacitors can store energy. When current flows through a capacitor, it stores electrical energy. When there is no current flow, it releases the stored energy. It works similarly to a stack in data structures.
- Inductors work similarly to capacitors. A change in current will cause an inductor to generate a magnetic field, which in turn affects the circuit. Energy storage formula is $E = \frac{1}{2}LI^2$. Inductance formula is $V = L\frac{dI}{dt}$.
- Single-phase rectifier circuits convert alternating current(AC) to direct current(DC).
- By moving a conductor (such as a coil) through a magnetic field, it generates an alternating current (AC).
- A three-phase rectifier is a device that converts three-phase alternating current (AC) into direct current (DC). Three-phase AC has three wires, each carrying a voltage that is 120 degrees out of phase with the others.
- Diodes are electronic components that allow electric current to flow in only one direction.