REPORT – SUNDAY  
SIMULATIONS – TUESDAY  
  
DIODES, TYPES, APPLICATIONS  
  
inrush current protection  
  
Types of diodes

* **Zener diode**: Provides a reference voltage, and is used in reverse bias
* **Light emitting diode (LED)**: Emits light when an electric current passes through it
* **Schottky diode**: Has a lower forward voltage drop and faster switching speed than regular diodes
* **Laser diode**: Produces coherent light, and is used in CD drives, DVDs, and laser gadgets
* **PN junction diode**: A two-terminal semiconductor device that passes current in one direction
* **Tunnel diode**: Used in high-frequency applications, and can exhibit negative resistance
* **Avalanche diode**: Works in reverse bias condition, and results in a large current
* **Varactor diode**: Behaves as a variable capacitor, and is used to replace variable capacitors that require mechanical operation
* **Photodiode**: Converts light into electrical current, and is used in optical communication systems, light sensors, and medical imaging devices

Circuits that commonly require diodes include: rectifier circuits (converting AC to DC), voltage regulator circuits using Zener diodes, clipping circuits, clamping circuits, signal detection circuits using photodiodes, and LED circuits; essentially, any circuit where the need to allow current flow in only one direction is crucial.   
  
The two main types of rectifiers based on the number of diodes used are: half-wave rectifier (using 1 diode) and full-wave bridge rectifier (using 4 diodes), centre-tap(2 diodes)

TINKERCAD

1. HALF WAVE RECTIFIER – CONNECT TO A OSCILLOSCOPE – DRAW 2 SO THAT 1 SHOWS +VE CYCLE & OTHER SHOWS -VE CYCLE IN OSCILLOSCOPE.  
2. FULL WAVE RECTIFIER – CONNECT TO A OSCILLOSCOPE (optional)  
An oscilloscope is a laboratory instrument commonly used to display and analyze the waveform of electronic signals so that only AC comes out is verified.