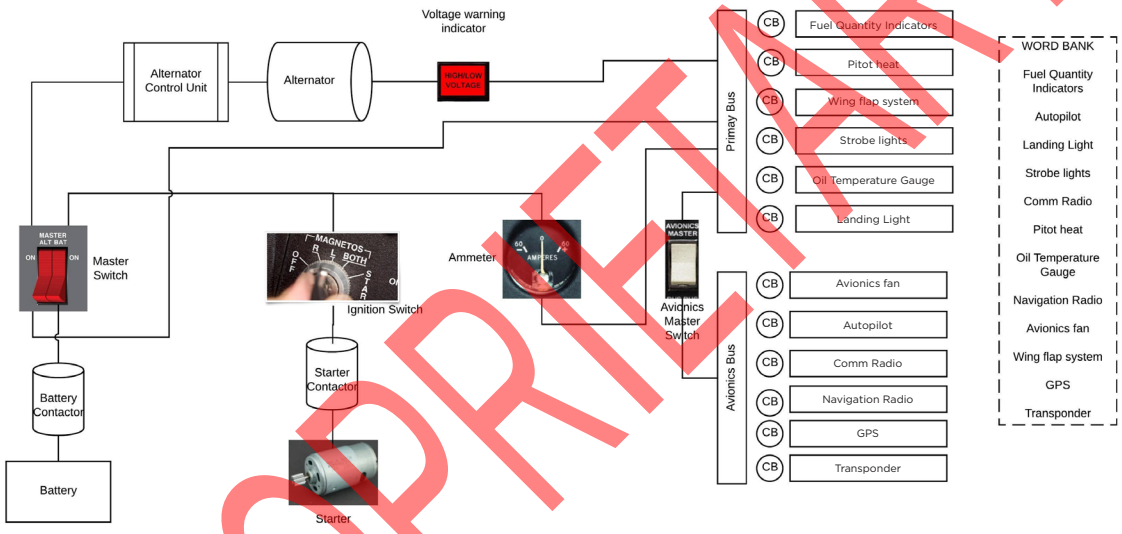
THE ELECTRICAL SYSTEM

Directions: Use the airplane electrical diagram below to help you complete this activity. For each item listed, explain its role and function within the airplane's electrical system.



1. Using the word bank, assign the different types of avionics equipment to either the primary or avionics bus.
2. For each of the following electrical components, explain its function and operation within the electrical system.

Battery - *uses chemical reactions to provide electrical power; used to start the engine and power the electrical equipment while the engine is not running or to provide temporary power in the event of an alternator failure*

Master Switch/Avionics Master Switch - *creates a break in the circuit; Master Switch is used to provide power to the primary bus for equipment that is not sensitive to power spikes as the alternator is turned on during the start up process; also provides power to the devices needed during start up like the starter motor, lights, and engine gauges; the Avionics Master controls the Avionics Bus and allows the pilot to isolate the more spike-sensitive equipment installed on the airplane*

Ammeter - *displays the charging status of the battery and electrical system; if the the alternator is working properly, the ammeter will show a positive charge is being provided to both the aircraft's electrical devices and is recharging the battery*

Alternator - *uses electromagnetic coils to create (induce) electricity; is turned quickly by a belt attached to the engine crankshaft; is used to power the aircraft's electrical system and recharge the battery*

Alternator Control Unit - *senses and adjusts the power output of the alternator by varying the power of the electromagnet (field coil) in the alternator; is used to create a stable level of power to prevent damage to the more electric spike-sensitive components found on the avionics bus*

Circuit Breaker - *a small, resettable switch that protects electrical circuits from overloading and damaging equipment or causing a fire*

Primary/Avionics Bus - *a central terminal to simplify wiring and efficiently distribute power to the airplane's electrical components; controlled by a master switch to allow the pilot to power or isolate the appropriate equipment for operations*

Starter - *a small, strong, battery-powered electric motor used during engine start to turn the engine until it begins to run on its own*

Battery/Starter Contactor - *a magnetically actuated remote switch that allows a small amount of current to connect a high power electrical circuit; used to minimize the amount of thick wires installed on the airplane*

3. Based on what you have learned, draw a basic electrical circuit that incorporates:
   a. a battery,
   b. a master switch that controls a device found on the primary bus,
   c. and an avionics switch that controls a device found on the avionics bus. Be sure this circuit is isolated from the primary bus to protect the avionics.
   NOTE: You can just draw a simple diagram like the circuits you made in this lesson. For example:

   Answer Key: student diagrams should include circuits as depicted below and powering appropriate equipment for each bus. See the answer to #1 for a guide on the type of equipment found on each bus.