Introduction to Arduino

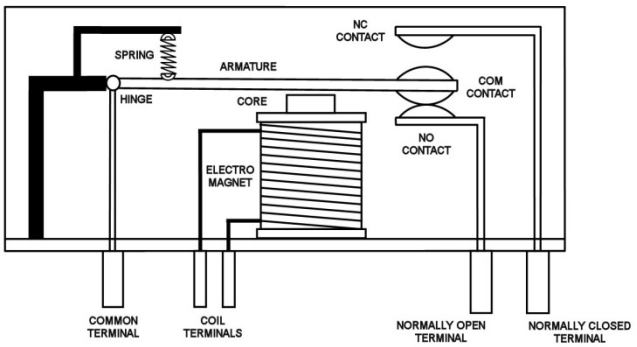
Relays

Mark /10

Note: Marks will be taken off for incorrect answers or messy breadboarding

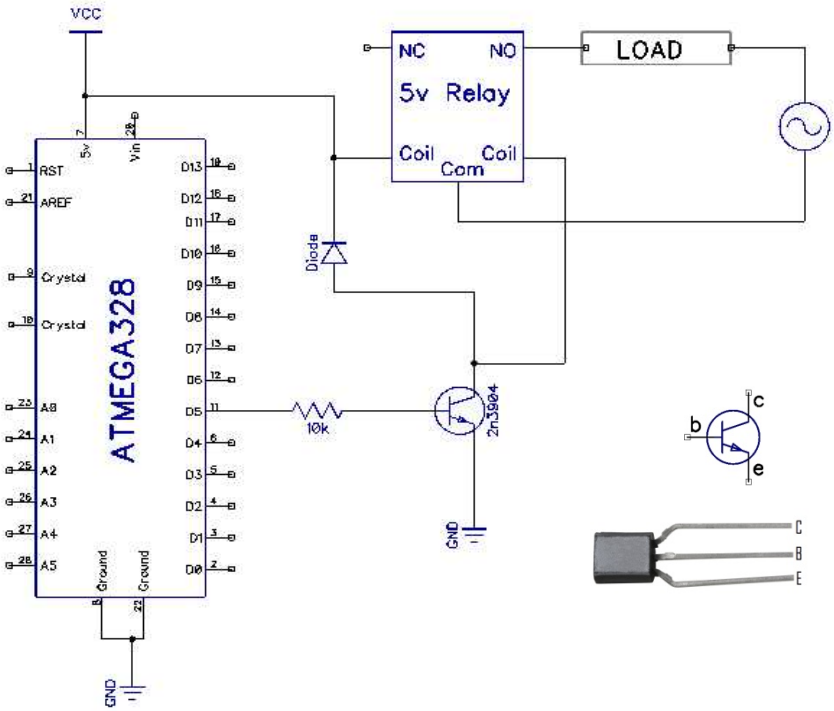
1. In this lab you are going to work with a relay. A relay is a mechanical device that uses a smaller control voltage to turn ON/OFF a larger voltage/current in a circuit. A good example is switching 110v AC.

2. Inside the relay there is a coil (electromagnet) that when energized switches contacts. When the coil is de-energized the spring inside disconnects the contacts. A relay can be connected as NC (normally closed) or NO (normally open). To use a relay as a switch, you interrupt a power wire going to the device and connect one end to the common and the other to either the NO or NC terminal on the relay.



3. The coil in the relay needs a little more current to work than the 40mA the Arduino output pins can provide, so a transistor (2n3904 or equiv) is used to switch the relay on/off..

4. The "protection" diode in the circuit is needed to stop a brief high voltage from harming the transistor and the IC when the coil is switched off.



5. **Using what you have learned from Labs #1 - #3**, make a 110v light bulb blink On/Off every second using the schematic to the right. The "LOAD" is the light bulb and the symbol is the plug that you put into the wall socket.

Show the teacher the working lab and code.

Marks will be taken off if the wires on the breadboard are not flat !!!