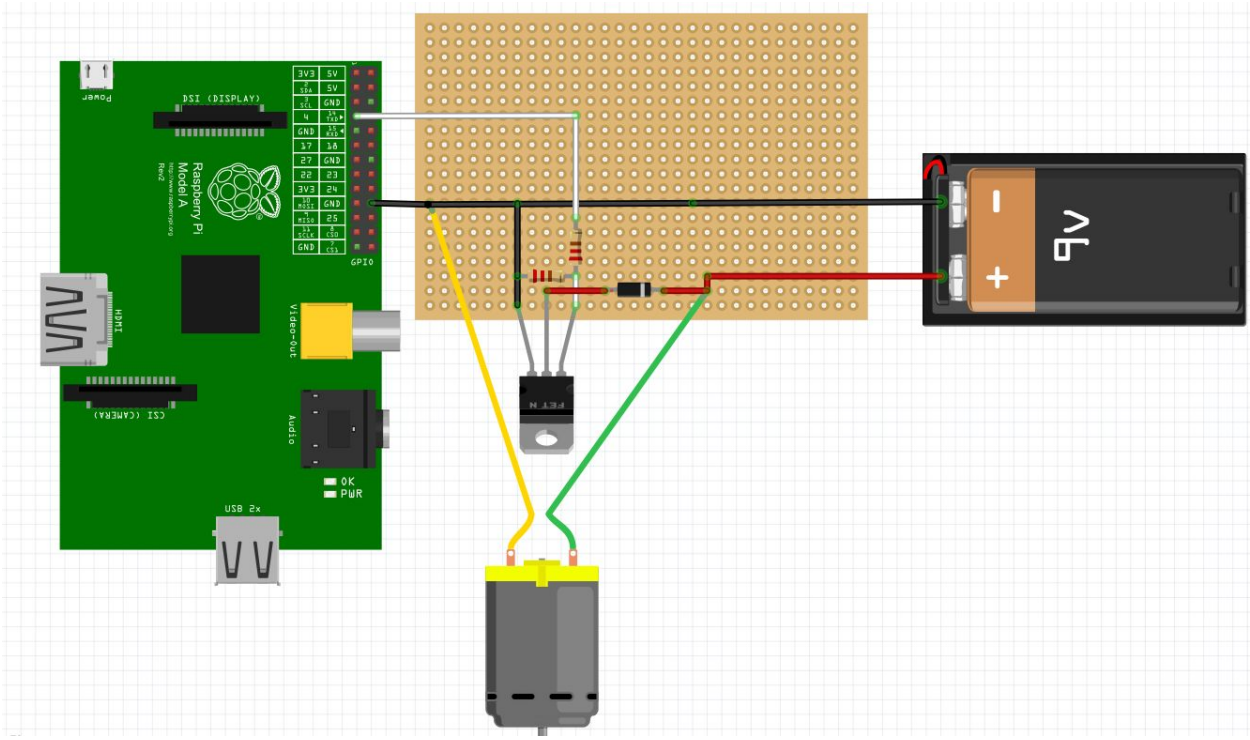
The following image represents how the circuit should look after the wiring is complete. Note that instead of a 9V Battery we are using a 12V power supply.



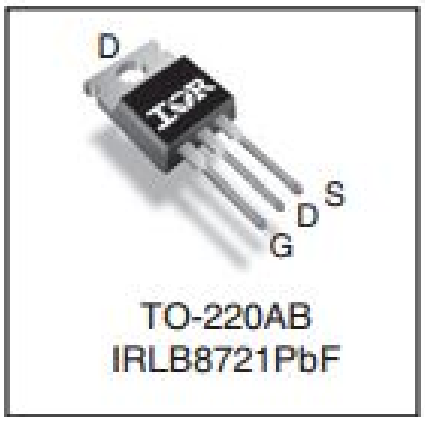
List of items you will need

- Circuit
    - 1 Common 12 V Power Supply
    - 1 Solenoid
    - 1 Nidec 24V .09A Fan
    - 1 Raspberry PI
    - 2 Resistors
        - 1k Ohm
        - 10k Ohm
    - 1 Diode
    - 1 Mosfet IRLB8721
    - 1 Card Reader ZCS100 from Zhenzhen ZCS Technology Co.
    - Wires/Solder/Perf board/Cardboard/Nails/Glue
- Front End
    - 1 Android Nexus 7 1st Gen tablet
    - 1 Android Power cable (Tablet)
- Back End
    - 1 Monitor
    - 1 Keyboard
    - 1 Mouse
    - 1 HDMI Cable
    - 1 Ethernet Cable

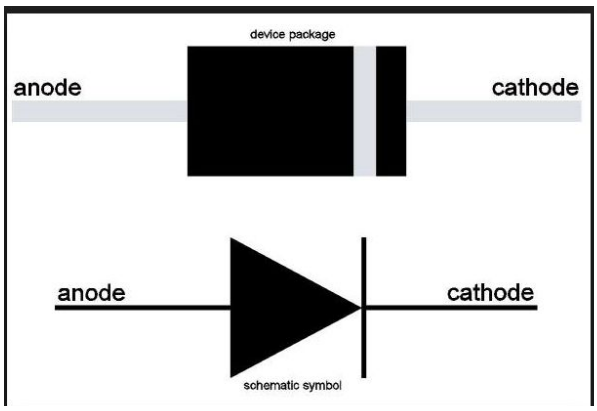
    - 1 Power Cable for PI
- Tools:
    - Wire Strippers
    - Soldering Gun
    - Drill/Drill bits

Step 1: Wiring

The mosfet has three different pins: G - Gate, D - Drain, S - Source.



1. Connect G to S with a 10k Ohm 5% resistor (Brown, Black, Orange, Gold)
2. Connect the 1k Ohm 5% resistor (Brown, Black, Red, Gold) to the G as well leaving the other end free
3. Connect a wire from S to a common ground location (This will be used for all grounds)
4. Diode:



5. Connect the anode of the diode to the D of the Mosfet.
6. Grab your solenoid. Yours should have the wires exposed the end.
    - If this is not the case then, grab your wire strippers and cut/strip the end
    - Find the power and ground wires. In our case we had 4 different wires and the green wire happened to be power while the black, ground.
    - The Ground-end will be connected to the anode side of the diode while the positive the cathode side. This will allow for control of the power to the solenoid

7. Connecting the fan: we again need to expose the ends of the wires.
    - Attaching the ground to the common ground and the positive end to the cathode end of the diode
8. Finally we should grab the power supply, making sure that it is not plugged in, cut the ends off and strip the wires. Make note of which wire is positive and negative.
    - Take the negative end and plug it into the common ground and and the positive to the cathode.

Completed Circuit Diagram