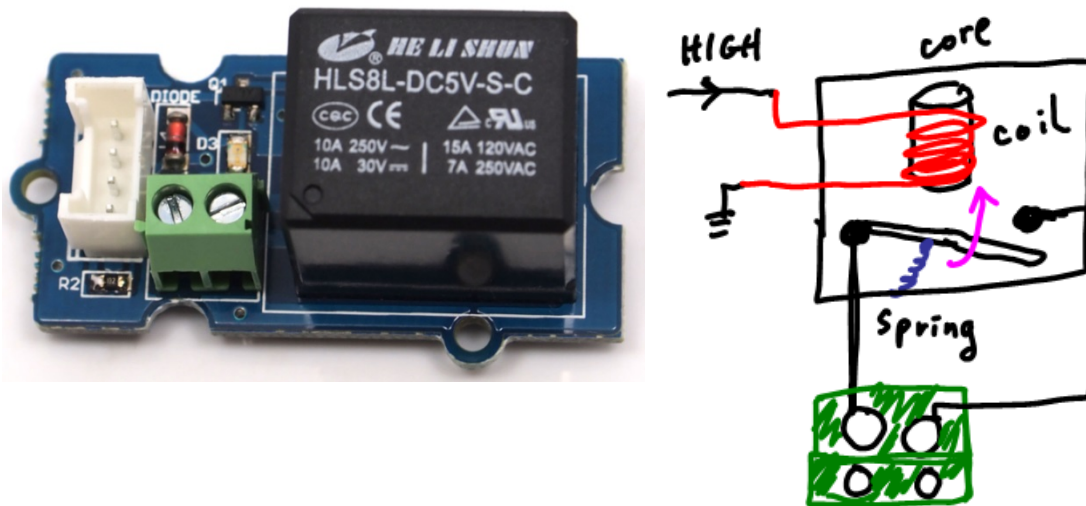


### What is a relay?

Lab 6 deals with a relay board which contains (as shown in the picture from the Grove), among others, a black box (this is a relay itself), and two terminal of green color (which is the electronic or magnetic switch contact for Open/Close, and a connector from a Galileo to control the black box (the relay per se).



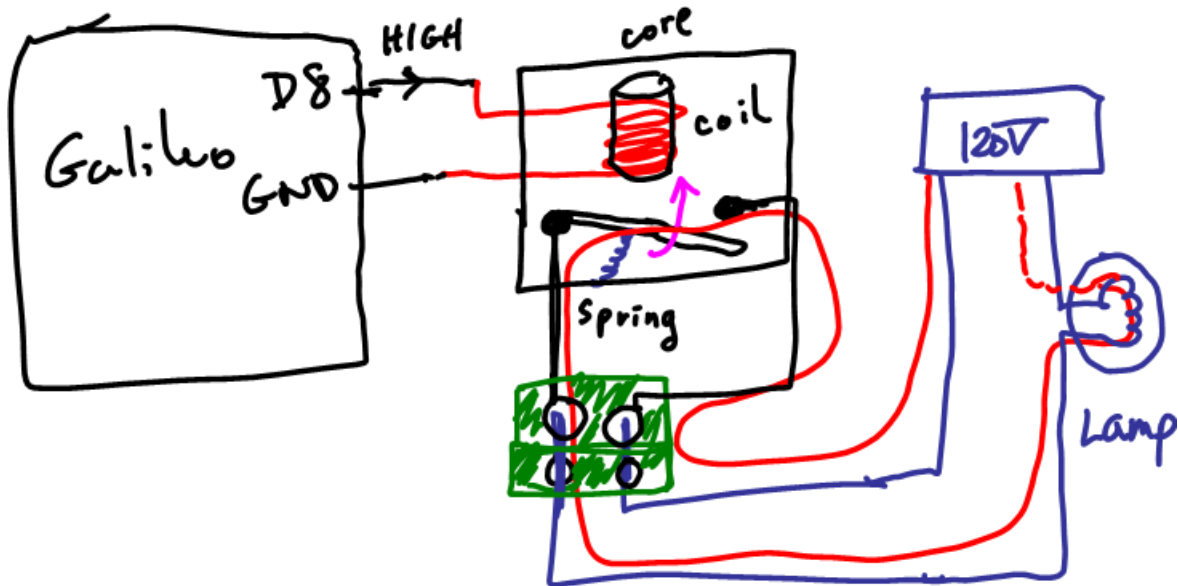
The right-hand side of the above figure is the inside structure of the relay. The metal lever is attached to a mechanical spring (in reality or in figuratively) so that the contact is disconnected and it remains in the open position unless something has been done, and this case is usually termed "normal open position." When a current flows through the coil, the core becomes a magnet and it attracts the metal lever toward the contact point overcoming the spring tension, making a small click or tick sound. Summarily, a relay is an electronic switch by which the coil side and the lever side are isolated by means for magnetic and mechanical force.



Now let's take a closer look at the lettering of the relay. The second line says that the input voltage between the coil must be DC 5V. This tells that the HIGH output of 3.3 V may not overcome the spring tension and make the contact close. At the bottom, we see the electrical insulation strength of the metal lever and contacts: they can withstand 10A 250VAC, 15A 120VAC, 10A 30VDC, and 7A 250VAC. More specifically, during the open state, the contacts are safe enough to hold a voltage level of 250 VAC for example and, in closed position, are safe enough to flow 10A current. So it seems that most of

home appliances can be electronically controlled by this relay.

Now, let's connect a lamp of 100V as illustrated below. If we send HIGH to the Output port which connects the one end of the coil, the contact will be closed with a tick sound, and the lamp will be on. One important advantage of relay is that we can separate the 5V side of digital system (Galileo and coil) and the high voltage side of application. In motor control which requires high current consumption, separation of two sides is essential in a proper motor control (digital side) and operation (high voltage/current equipment side).



Find more interesting application of using this electronic switch, relay!!!