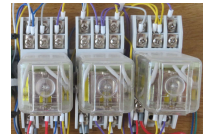Computers are full of binary registers and counters. This is an attempt to construct a 4-bit binary counter with electromechanical relays. It also displays the resulting 4-bit binary number on a regular 7-segment display.

A binary counter counts 0000, 0001, 0010, 0011, 0100, … 1111. The 7-segment display shows it hexadecimal equivalent: 0, 1, 2, …, 9 followed by A, b, …, F.

These little circuit boards with LEDs show the status of the 1-bit counters.
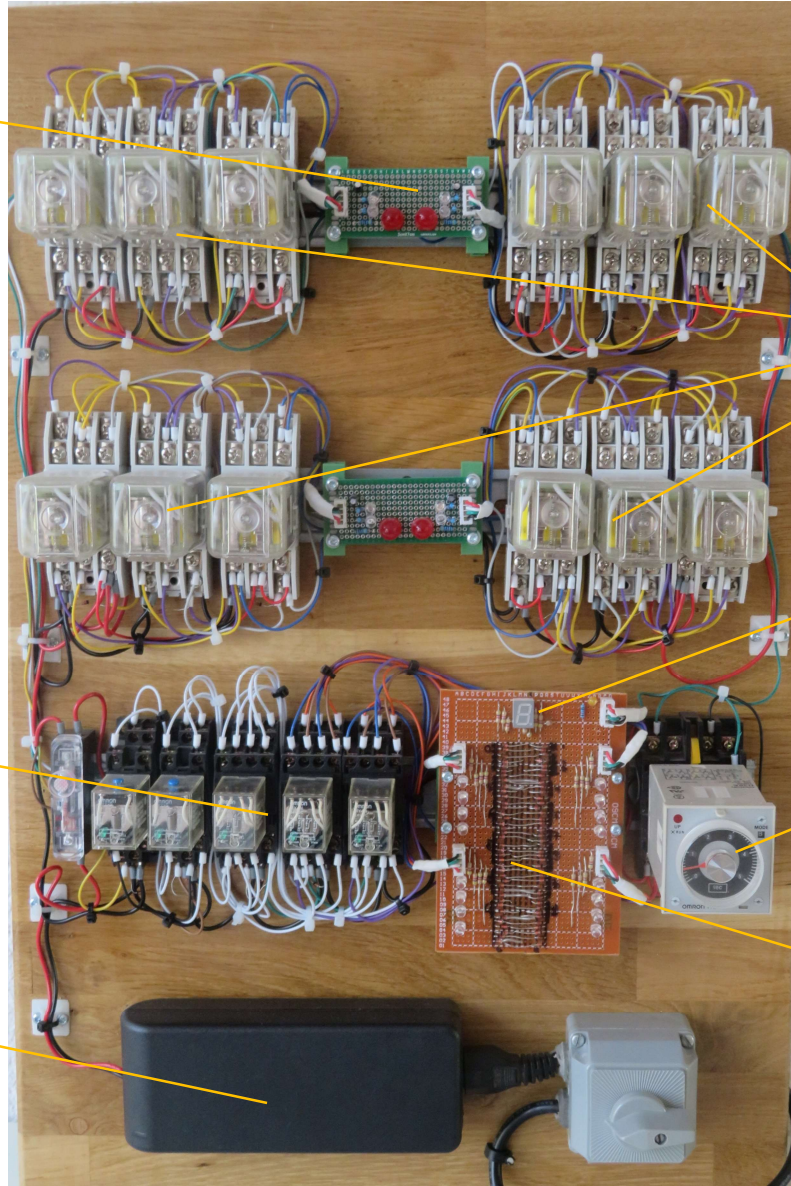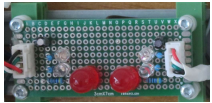
These groups of 3 relays implement a 1-bit binary counter.

These 5 relays implement a demultiplexer. This turns the 4-bit binary signal into 16 discrete signals, to drive the diode matrix for the 7-segment display.

This 7-segment display displays the hexadecimal position of the counter.

This is an old timer relay that takes care of the pulses that drive the counter.

An old 24v DC power supply, once used for a piece of computer equipment, powers the device.

To avoid using an integrated circuit for displaying the 4-bit result on a 7-segment display, I build a diode matrix. This drives the 7-segment display, based on the counter position.