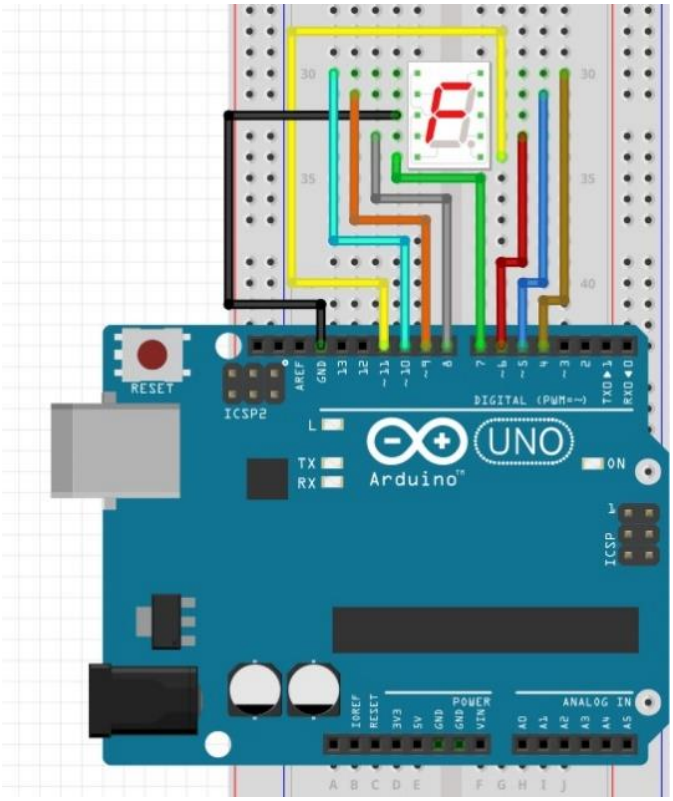
SETR

Lab 1: Arduino + LED display / counter



Tasks:

1. Create counter from 0 to 9 and down. At time of decrementing of our counter there should be a digit point (dp).
2. The same as the first one, but with some features. Now it should work with Serial display and support commands: pause on (stop any changes on the display “freeze” it, but counter should go on), pause off (run display with current counter value), reset (set all parameters as at the begging of counting).

Solutions:

- First problem:
  - Below you can see design and scheme of our counter. We use 4 last digits in D registers (pins PD4, PD5, PD6, PD7), and 4 first (PB0, PB1, PB2, PB3). On our Arduino there are pins from D4-D11.
  - First 4 pins working with a, b, c, d diodes, other 4 with e, f, g, dp.
  - How does it work: loop from 0 to 9 and backward. For every numeral to show we have bit representing value, such like B00000111 for 7 (more details you can see in commentaries in code).
- Second problem:
  - We still have the same scheme and the same design, the same pins are used to light on. Now we have a little bit another algorithm.
  - We have 4 global variables: numeral to show, counter, changing value (1 or -1), and serial command value.
  - Calling every loop() function algorithm changes counter value, if we doesn’t have pause mode we also changing a shown numeral. In pause mode we “freeze shown value”.
  - Other details are in the code.