

# Electronics II

## Exercise 5

Deadline Wed 28.2.2018 12:00

1. Read the four least significant bits of PORTD with internal pullup resistors enabled, do a bitwise NOT on them and write them on the four most significant bits of the same port. Do not use `pinMode()`, `digitalRead()` or `digitalWrite()` functions in this task. Use [port registers](#) instead. (1.5p)

For testing connect the input pins to either GND or leave floating and put leds on the output pins. Make sure the pullups don't get disabled when writing to the port. Read also the "Why use port manipulation?" section behind the given link.

2. Detect which button of the IR remote controller is pushed and write it to the serial port. (1.5p)

3. Make the stepper motor rotate back and forth full rotations. (1.5p)

4. Make an IR controlled stepper motor with following controls: two buttons which rotate the motor clockwise/counterclockwise when the button is being pressed and two buttons which increase/decrease the speed. (1.5p)