Exercise 1: introducing the problems of the laboratory.

The Figure 1 shows three diagrams using the 74194 integrated circuit (universal shift register). Please find the 74194 chip specification by yourself (preferably on the Internet at Motorola, Texas Instruments or Philips web pages) and thoroughly familiarize yourself with its operation. Then theoretically analyze and verbally describe the behavior of the given systems. Particular attention should be paid to the importance of external connections of the integrated circuit, as the markings given in the figure may differ from those in the description downloaded from the Internet. Two circuits indicated by the teacher will have to be implemented during the laboratory.

Steps of the exercise
1. Connect the first circuit indicated by the teacher. Check its operation by observing the QA, QB, QC and QD outputs.
2. Connect the second circuit indicated by the instructor. Check its operation.

Content of the report:
- respectively, on pages 1, 2 and 3, present your method of analyzing the operation of circuits a), b) and c),
- The last sheet should include drawings of the three circuits. On the right side of each circuit one should give a few sentences of the expected operation and a time diagram (it should be prepared at home with the simulation printout in selected CAD software)

Comments:
1. The exercise is very simple, despite everything requires careful preparation.
2. It should be noted that the signal values have not been indicated for some inputs. In practice all inputs should be set to some values. Otherwise the input value can be hard to predict.
3. The clock signal source is simulated by using one of the switches of the logic setter,
4. Please do not use the setter of logical values, when a certain input of the system should always be a constant value (0 or 1). In such case use the available values directly from the mounting plate (red wire - value 1, black / blue wire - value 0).
5. On the LED display, one should show the values of the four outputs of the system.

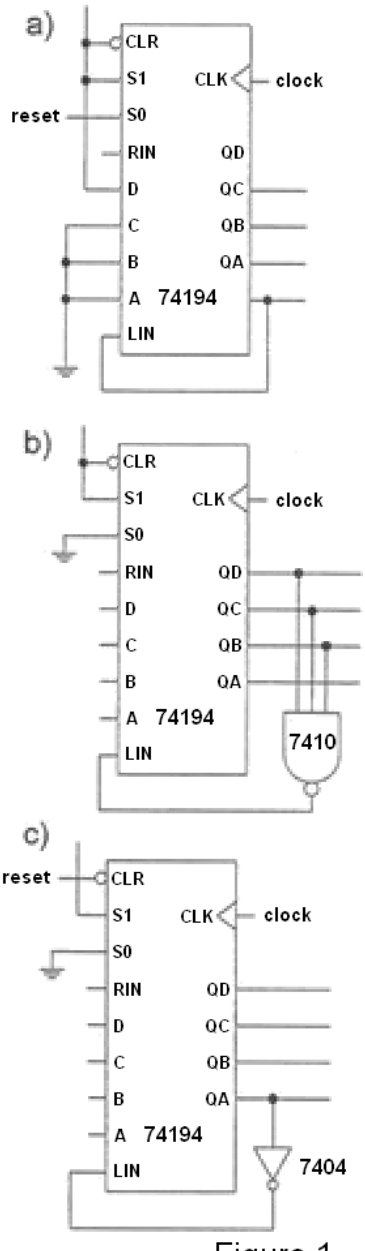

Figure 1