Mathematical Linguistics Laboratory

Task 2: (2 hours)

Automaton accepting all the sets from the file in which there are elements which repeated themselves once.

Program parameters:

- Using Nondeterministic Finite Automaton (NFA) propose a computer program which will accept all the sets contained elements which repeat themselves once
- NFA is using following alphabet: $\sum = \{0,1,2,3,4,5,6,7,8,9\}$
- Program should read data from a whole file at once and points explicitly all cases (for example a position of the first element of the set) where the accepted sets are. It is possible to separate the sets from themselves with the symbol "#".

The Rules:

1. Your program must use transition table to determine its next state
2. The console version of the program – mark 4
3. The program with GUI – mark 5
4. You can choose any language from C/C++, Java, C#, etc.
5. Additional advantage – if the program will be able to check the file's data correctness (if all enclosed sets were constructed correctly, please input the faulty set as the example). You can use NFA or FA to fulfill this additional task. If you will do that, the console version is enough to obtain mark 5.
6. additional tip: you should enclose "wider range alphabet" than defined – digits and letters for example as well as use the sign which terminates the whole file. EOF – for example
7. Finishing and presenting working program according to the requirements during the initial lab or at the beginning of the next one is awarded with the highest mark. Presenting it during the next lab decreases the final mark by one. Presenting it during the third lab – it is awarded only with the mark 3, at maximum,
8. Besides of the program and good commented code (presenting that the student understands the subject – he/she also should enclose the FA diagram and the next state table as a printed version for presenting the working project. Drawings will not be accepted.

The zip or rar packed archive should be named after following schema: LM_lab_2_Surname_indexnumber