Tutorial Sheet 1

Task 1. For each of the applications seen during the course in section "Light NLP applications", tell what the inputs and outputs are and give an idea of the processing provided by this application.

Discuss the solution of these applications using the different scientific approaches seen in course.

Task 2. The objective of this task is to remind the students of the formal models and theories, which have been already seen in "formal language theory" course and is being used in NL morphology such as :

- state machines
  - finite-state automata (deterministic and non-deterministic)
  - finite-state transducers
- rule systems
  - regular grammars (regular expressions)
  - regular relations
  - context-free grammars

Questions:

1. Formally, define finite-state automaton (FSA).
2. What are the mapping of FSA elements in NLP?
3. How to use finite-state automaton in NLP?
4. Give an example of usage of FSA in morphology.
5. Consider the FSA in figure bellow:
6. Define a regular expressions (RegEx).
7. How can we use RegEx in NLP?
8. Give an examples of usage of RegEx in NLP.
9. What are finite-state transducers (FST)?
10. What are context-free grammars (CFG)?
11. How can we use the CFGs in NLP?