

Tutorial #7

1. Show that if L is decidable, so is \bar{L} . Does your argument work for semi-decidable languages?
2. Describe a Turing Machine for the language

$$\{w\#w \mid w \in \{a, b\}^*\}$$

3. Run CYK algorithm in the following grammar

$$S \rightarrow AY|BZ|a|b$$

$$X \rightarrow AY|BZ|a|b$$

$$Z \rightarrow XB$$

$$Y \rightarrow XA$$

$$B \rightarrow b$$

$$A \rightarrow a$$

for the strings $abbba$ and $aaaba$

4. For every Non-deterministic Turing Machine, argue that there is a deterministic Turing Machine accepting the same language.