



Sheet 6: Syntactic Parsing

1) What language does the following CFG generate?

$$S \rightarrow X1X1X1X$$

$$X \rightarrow 0X \mid 1X \mid \epsilon$$

2) Convert the following CFG into a grammar in CNF:

$$S \rightarrow ASB$$

$$A \rightarrow aASA \mid a \mid \epsilon$$

$$B \rightarrow SbS \mid A \mid bb$$

3) Given the following grammar:

$$S \rightarrow AB$$

$$A \rightarrow CD \mid CF$$

$$B \rightarrow c \mid EB$$

$$C \rightarrow a$$

$$D \rightarrow b$$

$$E \rightarrow c$$

$$F \rightarrow AD$$

- For the sentence "aaabbbcc" apply CKY parsing algorithm to determine whether the sentence can be derived by the given grammar or not. If it can be derived, show its parse tree(s).
- For the sentence "ababca" apply CKY parsing algorithm to determine whether the sentence can be derived by the given grammar or not. If it can be derived, show its parse tree(s).