1. a. Is this language regular? Strings over the alphabet a,b,c that contains an even number of a’s.
b. Convert this to an NFA: a (( b|a* c) x)*
c. Write an unambiguous grammer for: string that match regular expressions a*b* and have more a’s than b’s.
2. a. Define FOLLOW(X).
b. Describe the use of FOLLOW in constructing a predictive parsing table.
c. Describe an algorithm for finding all FOLLOWs in a given Context-free Grammar.
3. a) Write the RE for a Tiger ID symbol. The tiger ID symbol must start with a letter of the alphabet (possibly capitalized) and can be followed by a contagious set of alphanumeric and underscored characters.

b) Assuming a correctly functioning Tiger lexer, what is the output of the following sequence: ab23 2a2bc

c) Is it possible to write a RE for nested comments (like Tiger has)? If so, give the RE. If not, explain why you cannot.
4. a) Explain two methods for resolving shift/reduce conflicts using CUP
b) Give an example a shift/reduce conflict and show how to eliminate it using CUP pseudocode
5. a. Describe (in English) the language represented by this grammar.
b. Construct the LR(0) states for this grammar.
c. Determine if this is an SLR grammar.

\[
S \rightarrow B \$
B \rightarrow id \ P
B \rightarrow id \ [E]
\]

\[
P \rightarrow \quad P \rightarrow \ (E)
E \rightarrow B \quad E \rightarrow B, E
\]