

CSC 306 ADDITIONAL CONCEPTS FOR MIDTERM

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You should know how to write both a lexical analyzer and a recursive descent parser.

Here are some parsing-related questions to test yourself with before the midterm:

Explain the significance of the following for the definition of a programming language:

- (1) Token
- (2) Terminal symbol
- (3) Nonterminal symbol
- (4) Production
- (5) Start Symbol

In the context of a definition of a programming language through a context free grammar, what is a

- (1) a sentence?
- (2) a sentential form?

Let α be a sentential form for a language defined by a context free grammar. How do you define a

- (1) parse tree for α ?
- (2) a derivation of α ?

What is the difference between top-down and bottom-up parsing?

Describe how *recursive descent parsing* works.

In the grammar for the CINC language, several non terminal symbols are used to describe expressions: `EXPR`, `SIMPLEEXPR`, `TERM`, and `FACTOR`. Is it possible to describe the same expressions using just one nonterminal? What effect would such a change have on the meaning of the expressions?

Describe how the CINC lexical analyzer designed in class distinguishes keywords from identifiers.

Let α be a string of symbols of a context free grammar. Define the concept of a `FIRST` symbol (also called a `START` symbol or `BEGIN` symbol) and explain the significance of this concept to top-down predictive parsing.

Let X be a nonterminal symbol in a context free grammar. What is a `FOLLOW` symbol of X ? How is this concept useful in parsing?