Problem 1.2: 10 points
Problem 1.3(a): 5 points
Problem 1.3(b): 10 points

Preparation: Read the following and use as a guide for the following problems.
  • Loudon, "Compiler Construction" (see class Schedule page)- see section 1.3 “Translation Process”, focusing on the portions about parse trees and syntax trees (pages 8-11)

1.2 Given the C assignment

   \[ a[i+1] = a[i] + 2 \]

   draw a parse tree and a syntax tree for the expression, using the similar example in Section 1.3 as a guide.

1.3 Compilation errors can be loosely divided into two categories: syntax errors and semantic errors. Syntax errors include missing or incorrectly placed tokens, such as the missing right parenthesis in the arithmetic expression \( (2+3 \). Semantic errors include incorrect types in expressions and undeclared variables (in most languages), such as the assignment \( x = 2 \), where \( x \) is an array variable.

   a. Give two more examples of errors of each kind in a language of your choice.
   b. Pick a compiler with which you are familiar and determine if it lists all syntax errors before semantic errors or if syntax and semantic errors are intermixed. What implication does this have for the number of passes?