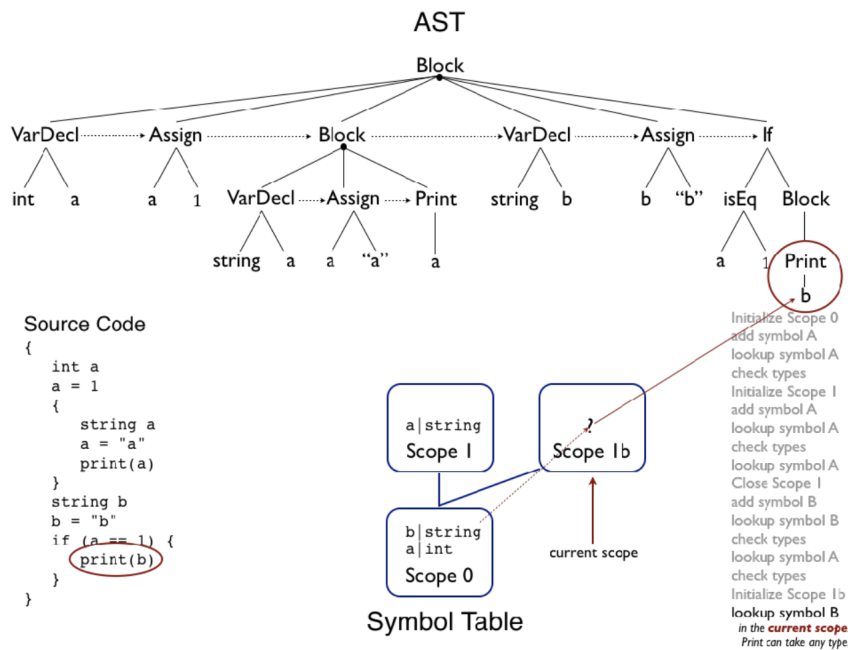# Lab Seven

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1 Problem 9.2 - Dragon

The diagram above creates an AST and a symbol table for the source code provided. When performing a left depth-first traversal on the AST, you can see that it will correctly re-construct the code in the correct order. First, scope 0 is initialized with the open brace that forms the block. In that scope, a is declared and given a value with the correct type (which is checked). Then scope 1 is initialized with another block. Inside this block, a is redeclared as a string and then given a value with type string. This is allowed because of the new scope. Then, it prints out a which is type string because the print statement is in the scope where a is declared as a string. Scope 1 then closes and we are back in scope 0 which declares the first string for this scope (b) and gives it a value of "b". Then it has to check the condition for the if by looking up the value of

a and checks that the types match and then initializes another scope that prints out the value of b. Since b is not declared within the new scope, it goes back to scope 0 to see if b is declared there and since it is, it can print b. Then that scope closes, goes back to scope 0 and closes that scope as well.