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Lab7
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Prompt: Describe in detail what is happening in the diagram below.

The AST is traversed with a depth-first in-order traversal. While it is being traversed, it is being scope checked and type checked. The AST begins with a block which implies a new scope. The Variable Declaration, int a, is put into the scope along with its type. It then will assign the value to a in the scope. The compiler must first check if that variable is in scope before assigning a value into it because it might not be there. The AST then sees a new block statement which implies another scope. The scope pointer is moved to a new scope in the tree. Then a variable called a is put in the scope with a type of string. The AST will check the assignment to a and make sure that the right hand side of the assignment of a is a string. The print statement is then scope checked for the value a. Once the block ends, the pointer in the scope tree is moved up to the parent block. Then a new variable called b is put into the current scope and is assigned a type of string. The variable b is then assigned the value of the string which is correct. A new if block is encountered and the isEqual function first checks if a is in scope and then checks if a can be compared to the value of 1 which it can be. The AST encountered another block which indicates a new scope. A new scope is declared. The print statement has a id of b in it and so the compiler checks parent scope for the value of b.