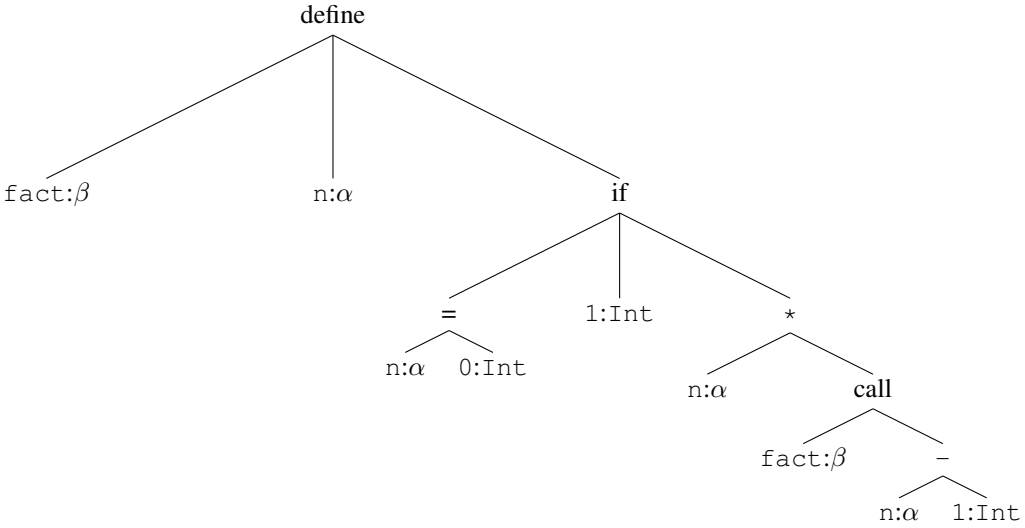
COMP 141: Data Types— Part 3

Instructions: In this exercise, we are going to study different concepts on data types.

(1) Consider the following Haskell functions. For each show how Hindley-Milner type inference constructs the type of the function.

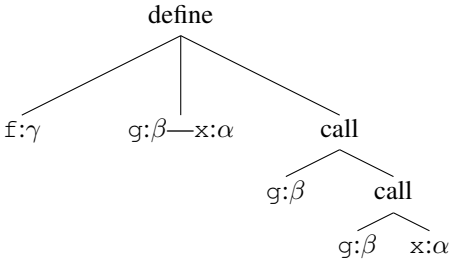
(a) `fact n = if n == (0::Int) then (1::Int) else n * (fact (n - (1::Int)))`

Hint: Start with the following AST for the definition:



(b) `f (g, x) = g (g x)`

Hint: Start with the following AST for the definition:



(2) Consider the following Haskell function definition.

```
f x = x:(x && False):[]
```

Show in a step-by-step manner how Hindley-Milner type inference constructs the type of the function. You should start with the AST of the function definition.