

# CSE 130 (Wi 25) Handout

Feb 11, 2025

## Question 1

Write down a Haskell datatype for a **binary tree** with `Int` elements stored at the **leaves**

```
data Tree = _____  
          | _____
```

## Question 2

Is the following function **tail-recursive**?

```
sumTo :: Int -> Int  
sumTo n = if n <= 0 then 0 else n + sumTo (n - 1)
```

If not, write a tail-recursive version of it.

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## Question 3

Given the below code

```
-- >>> evens [1,2,3,4]  
-- [2,4]  
evens :: [Int] -> [Int]  
evens xs = filter isEven xs  
  where  
    isEven :: Int -> Bool  
    isEven x = x `mod` 2 == 0  
  
-- >>> fourChars ["i", "must", "do", "work"]  
-- ["must", "work"]  
fourChars :: [String] -> [String]  
fourChars xs = filter isFour xs  
  where  
    isFour :: String -> Bool  
    isFour x = length x == 4
```

What must be the type of `filter`?

```
filter :: _____
```